

# INTERNATIONAL HYDROGRAPHIC ORGANIZATION



## ANNUAL REPORT 2013

### PART 1 – GENERAL

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## LIST OF ACRONYMS

### A

ABLOS	Advisory Board on the Law of the Sea
ACCSEAS	Accessibility for Shipping, Efficiency Advantages and Sustainability
AIS	Automatic Identification System
AMNAS	Arabian Maritime and Navigation Aids Services
ARHC	Arctic Regional Hydrographic Commission
ATCM	Antarctic Treaty Consultative Meeting
AUV	Autonomous Underwater Vehicle

### B

BASWG	Working Group on the Safety of Navigation in the Black and Azov Seas
BSH	<i>Bundesamt für Seeschifffahrt und Hydrographie</i>
BSHC	Baltic Sea Hydrographic Commission

### C

CBSC	Capacity Building Sub-Committee
CBWP	Capacity Building Work Programme
CIRM	Comité International Radio-Maritime
CL	Circular Letter
COMNAP	Council of Managers of National Antarctic Programs
COMSAR	Subcommittee on Radiocommunications and Search and Rescue
COP	Common Operating Picture
CSB	Crowd-Sourced Bathymetry
CSPCWG	Chart Standardization and Paper Chart Working Group

### D

DBM	Digital Bathymetric Models
DCDB	Data Centre for Digital Bathymetry
DCEG	Data Capture and Encoding Guide
DE	the Sub-Committee on Design and Equipment
DGIWG	Defence Geospatial Information Working Group
DG Mare	Directorate-General for Maritime Affairs and Fisheries
DHN	<i>Dirección de Hidrografía y Navegación</i>
DIPWG	Digital Information Portrayal Working Group
DPSWG	Data Protection Scheme Working Group
DQWG	Data Quality Working Group
DRWG	Document Review Work Group
DTT	Digital Tide Tables

### E

EAHC	East Asia Hydrographic Commission
EAtHC	Eastern Atlantic Hydrographic Commission
EC	European Commission
ECDIS	Electronic Chart Display and Information System
ECOSOC	UN Economic and Social Council
EFTA	European Free Trade Association
EIHC-5	5 <sup>th</sup> Extraordinary International Hydrographic Conference
EMODnet	European Marine Observation and Data Network
ENC	Electronic Navigational Chart
ERASMUS	European Community Action Scheme for the Mobility of University Students
ETMSS	Expert Team on Maritime Safety Services

ETSI Expert Team on Sea Ice  
EU European Union  
EU2MPWG Working Group on European Union Marine and Maritime Policies

## **F**

FIG International Federation of Surveyors  
FTA Finnish Transport Agency

## **G**

GEBCO General Bathymetric Chart of the Oceans  
GGC GEBCO Guiding Committee  
GIS Geographic Information System  
GMDSS Global Maritime Distress and Safety System  
GMRT Global Multi-Resolution Topography  
GRSS Geoscience and Remote Sensing Society  
GSDI Global Spatial Data Infrastructure Association  
GST Geodatastyrelsen (Danish Geodata Agency)

## **H**

HCA IHO Hydrographic Commission on Antarctica  
HDWG Hydrographic Dictionary Working Group  
HO Hydrographic Office  
HSH His Serene Highness  
HSSC Hydrographic Services and Standards Committee

## **I**

IAATO International Association of Antarctic Tour Operators  
IAEA International Atomic Energy Agency  
IAG International Association of Geodesy  
IALA International Association of Marine Aids to Navigation and Lighthouse Authorities  
IALA-WWA IALA World Wide Academy  
IAPH International Association of Ports and Harbours  
IBCSO International Bathymetric Chart of the Southern Ocean  
IBSC International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers  
ICA International Cartographic Association  
ICC International Cartographic Conference  
ICCWG International Charting Coordination Working Group  
ICS International Chamber of Shipping  
IEC International Electrotechnical Commission  
IEEE Institute of Electrical and Electronics Engineers  
IFHS International Federation of Hydrographic Societies  
IGO Inter-Governmental Organization  
IGU International Geographic Union  
IHB International Hydrographic Bureau  
IHC International Hydrographic Conference  
IHM *Instituto Hidrográfico de la Marina*  
IHO International Hydrographic Organization  
IHPT *Instituto Hidrográfico Português*  
IHR International Hydrographic Review  
IMIA International Map Industry Association  
IMO International Maritime Organization

IMPA	International Maritime Pilots Association
IMSO	International Mobile Satellite Organization
INDEMER	Institute of Economic Law of the Sea
INSPIRE	Infrastructure for Spatial Information in the European Community
IOC	Intergovernmental Oceanographic Commission
IPIECA	The global oil and gas industry association for environmental and social issues
IRCC	Inter-Regional Coordination Committee
ISPRS	International Society for Photogrammetry and Remote Sensing
ISO	International Organization for Standardization
ITLoS	International Tribunal on the Law of the Sea

## **J**

JB-GIS	Joint Board of GIS
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology
JECMaP	Joint European Coastal Mapping Programme
JHOD	Japan Hydrographic and Oceanographic Department

## **K**

KHOA	Korea Hydrographic and Oceanographic Department
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## **L**

LiDAR	Light Detection and Ranging
LINZ	Land Information New Zealand

## **M**

MACHC	Meso-American and Caribbean Hydrographic Commission
MBSHC	Mediterranean and Black Seas Hydrographic Commission
MEH	Marine Electronic Highways
MEIP	Maritime Economic Infrastructure Programme
MOWCA	Maritime Organization for West and Central Africa
MPA	Marine Protected Areas
MSC	Maritime Safety Committee
MSDI	Marine Spatial Data Infrastructure
MSDIWG	Marine Spatial Data Infrastructure Working Group
MSI	Maritime Safety Information

## **N**

NATO	North Atlantic Treaty Organization
NAV	Sub-Committee on Safety of Navigation
NCSR	IMO Sub-Committee on Navigation, Communications and Search and Rescue
NGDC	US National Geophysical Data Center
NGIO	Non-Governmental International Organization
NGO	Non-Governmental Organization
NHC	Nordic Hydrographic Commission
NIOHC	North Indian Ocean Hydrographic Commission
NOAA/OCS	Office of Coast Survey of the US National Oceanic and Atmospheric Administration
NPUBS	Nautical Publications Register
NSHC	North Sea Hydrographic Commission

**O**

OECS	Organization of Eastern Caribbean States
OEM	Original Equipment Manufacturer
OEWG	Outreach and Education Working Group (GEBCO)
OGC	Open Geospatial Consortium
OGP	International Association of Oil & Gas Producers

**P**

PAIGH	Pan American Institute of Geography and History
PI	Performance Indicator
PMWCA	Port Management Association of West and Central Africa
PYA	Professional Yachting Association

**Q****R**

RECC	Regional ENC Coordinating Centre
RENC	Regional ENC Coordinating Centre
RFI	Request for Information
RHC	Regional Hydrographic Commission
ROK	Republic of Korea
RSAHC	ROPME Sea Area Hydrographic Commission
RTCM	Radio Technical Commission for Maritime Services

**S**

SAIHC	Southern African and Islands Hydrographic Commission
SC	Sub-Committee
SCRUM	Sub-Committee on Regional Undersea Mapping
SCUFN	Sub-Committee on Undersea Feature Names
SCWG	Surface Current Working Group
SDI	Spatial Data Infrastructures
SDB	Satellite Derived Bathymetry
SENC	System ENC
SERPHC	South East Pacific Regional Hydrographic Commission
SHOM	Service Hydrographique et Océanographique de la Marine
SID	Source Identifier
SNPWG	Standardization of Nautical Publications Working Group
SOLAS	International Convention for the Safety of Life at Sea
SPC	Secretariat of the Pacific Community
SPI	Strategic Performance Indicator
SRWG	IHO Staff Regulations Working Group
SWAtHC	South West Atlantic Hydrographic Commission
SWPHC	South West Pacific Hydrographic Commission

**T**

TALOS	Technical Aspects of the UN Convention on the Law of the Sea
TC	Technical Committee
TC	Technical Cooperation Committee
TSCOM	Technical Sub-Committee on Ocean Mapping
TSMAD	Transfer Standard Maintenance and Application Development Working Group
TWLWG	Tidal and Water Level Working Group



**U**

UAE	United Arab Emirates
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UN	United Nations Organization
UNCLOS	United Nations Convention on the Law of the Sea
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management
USA	United States of America
USCHC	USA-Canada Hydrographic Commission
USM	University of Southern Mississippi

**V**

VPN	Virtual Private Network
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**W**

WEND	Worldwide ENC Database
WG	Working Group
WMO	World Meteorological Organization
WMS	Web Map Service
WP	Work Programme
WPI	Working-level Performance Indicator
WWMIWS	Worldwide Met-Ocean Information and Warning Service
WWNWS	World Wide Navigational Warnings Service
WWNWS-SC	WWNWS Sub-Committee

**X****Y****Z**



# CONTENTS

<b>INTRODUCTION</b> .....	<b>15</b>
<b>WORK PROGRAMME 1 – CORPORATE AFFAIRS</b> .....	<b>19</b>
<b>Introduction</b> .....	<b>19</b>
<b>Element 1.1 Co-operation with International Organizations</b> .....	<b>19</b>
<b>Task 1.1.1</b> Antarctic Treaty Consultative Meetings (ATCM) .....	19
<b>Task 1.1.2</b> Comité International Radio-Maritime (CIRM) .....	19
<b>Task 1.1.3</b> Council of Managers of National Antarctic Programs (COMNAP) .....	20
<b>Task 1.1.7</b> International Association of Antarctic Tour Operators (IAATO) .....	20
<b>Task 1.1.4</b> European Union (EU) .....	20
<b>Task 1.1.5</b> International Federation of Surveyors (FIG) .....	22
<b>Task 1.1.6</b> International Federation of Hydrographic Societies (IFHS) .....	22
<b>Task 1.1.8</b> International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) .....	22
<b>Task 1.1.9</b> International Association of Ports and Harbours .....	23
<b>Task 1.1.10</b> International Cartographic Association (ICA) .....	23
<b>Task 1.1.11</b> International Electrotechnical Commission (IEC) .....	24
<b>Task 1.1.12</b> International Maritime Organization (IMO) .....	25
<b>Task 1.1.13</b> International Maritime Pilots Association (IMPA) .....	26
<b>Task 1.1.14</b> Intergovernmental Oceanographic Commission (IOC) .....	26
<b>Task 1.1.15</b> International Organization for Standardization (ISO) .....	27
<b>Task 1.1.16</b> Joint Board of GIS (JB-GIS) .....	27
<b>Task 1.1.17</b> NATO Geospatial Bodies .....	27
<b>Task 1.1.18</b> United Nations Organization (UN) .....	27
<b>Task 1.1.19</b> World Meteorological Organization (WMO) .....	29
<b>Task 1.1.20</b> Other Organizations when their agendas have relevance to the programme of the IHO .....	30
<b>Element 1.2 Information Management</b> .....	<b>31</b>
<b>Task 1.2.1</b> Maintain and Extend the IHO Website .....	31
<b>Task 1.2.2</b> Develop IHO GIS and Web Server and Web Mapping Services .....	32
<b>Task 1.2.3</b> Develop IHB Desktop Publishing Services .....	33
<b>Task 1.2.4</b> Hydrographic Publications for which there is no specific body in charge ...	33
<b>Task 1.2.5</b> Maintain and Extend IHB IT Infrastructure .....	33
<b>Task 1.2.6</b> Circular Letters .....	33
<b>Task 1.2.7</b> IHB Technical Library .....	34
<b>Element 1.3 Public Relations</b> .....	<b>34</b>
<b>Task 1.3.1</b> Relationship with the Government of Monaco and other Diplomatic Missions .....	34

<b>Task 1.3.2</b> Compile and Publish IHR .....	34
<b>Task 1.3.3</b> World Hydrography Day .....	35
<b>Task 1.3.4</b> Public Relations and Representational Activities .....	36
<b>Element 1.4 Work Programme and Budget, Strategic Plan and Performance Monitoring .....</b>	<b>40</b>
<b>Task 1.4.1</b> IHO Strategic Plan and Performance Monitoring .....	40
<b>Task 1.4.2</b> IHO Work Programme and Budget.....	40
<b>Task 1.4.3</b> Conduct Biennial Stakeholders' Forums.....	40
<b>Element 1.5 IHB .....</b>	<b>41</b>
<b>Task 1.5.1</b> IHB Administration .....	41
<b>Task 1.5.2</b> IHB Translation Service .....	42
<b>Task 1.5.3</b> Commercial Support Contracts .....	42
<b>Task 1.5.4</b> IHB Staff Regulations.....	43
<b>Task 1.5.5</b> Maintenance of IHB Premises .....	43
<b>Task 1.5.6</b> Maintenance of IHB Furniture and Fittings .....	43
<b>Element 1.6 International Hydrographic Conferences .....</b>	<b>43</b>
<b>Task 1.6.1</b> 5th Extraordinary International Hydrographic Conference .....	43
<b>WORK PROGRAMME 2 - HYDROGRAPHIC SERVICES AND STANDARDS ..</b>	<b>45</b>
<b>Introduction.....</b>	<b>45</b>
<b>Element 2.1 Technical Programme Coordination .....</b>	<b>45</b>
<b>Task 2.1.1</b> Conduct annual meeting of HSSC.....	45
<b>Task 2.1.2</b> Provide technical advice and guidance on IHO technical standards, specification and publications.....	46
<b>Element 2.2 Hydrographic Data Transfer Standards .....</b>	<b>46</b>
<b>Task 2.2.1</b> Conduct meetings of relevant HSSC WGs dealing with hydrographic data transfer standards .....	46
<b>Task 2.2.2</b> Maintain and extend the relevant IHO standards, specifications and publications.....	47
<b>Task 2.2.3</b> Develop and maintain S-100-based Product Specifications .....	48
<b>Task 2.2.4</b> Maintain and extend S-100 Registry .....	48
<b>Task 2.2.5</b> Provide outreach and technical assistance regarding transfer standards ..	48
<b>Element 2.3 Nautical Cartography .....</b>	<b>49</b>
<b>Task 2.3.1</b> Conduct meetings of relevant HSSC WGs dealing with nautical Cartography.....	49
<b>Task 2.3.2</b> Maintain and extend the relevant IHO standards, specifications and publications.....	50
<b>Element 2.4 Digital Data Protection and Authentication .....</b>	<b>51</b>
<b>Task 2.4.1</b> Conduct meetings of relevant HSSC WGs dealing with data protection and authentication.....	51
<b>Task 2.4.2</b> Maintain and extend the relevant IHO standards, specifications and publications.....	51

<b>Element 2.5 Data Quality</b> .....	<b>52</b>
<b>Task 2.5.1</b> Conduct meetings of relevant HSSC WGs dealing with data quality.....	52
<b>Task 2.5.2</b> Maintain and extend the relevant IHO standards, specifications and publications.....	52
<b>Element 2.6 Nautical Publications</b> .....	<b>52</b>
<b>Task 2.6.1</b> Conduct meetings of relevant HSSC WG dealing with nautical publications .....	53
<b>Task 2.6.2</b> Develop, maintain and extend S-10n – Nautical Information Product Specification .....	53
<b>Task 2.6.3</b> Maintain and extend the relevant IHO standards, specifications and publications.....	53
<b>Element 2.7 Tides and Water Levels</b> .....	<b>53</b>
<b>Task 2.7.1</b> Conduct meetings of relevant HSSC WGs dealing with tides and water levels.....	54
<b>Task 2.7.2</b> Maintain and extend the relevant IHO standards, specifications and publications.....	55
<b>Task 2.7.3</b> Develop, maintain and extend a Product Specification for digital tide tables .....	55
<b>Task 2.7.4</b> Develop, maintain and extend a Product Specification for the transmission of real-time tidal data .....	55
<b>Task 2.7.5</b> Develop, maintain and extend a Product specification for dynamic tides in ECDIS.....	55
<b>Element 2.8 Digital Data Updating</b> .....	<b>55</b>
<b>Task 2.8.1</b> Maintain and extend the relevant IHO standards, specifications and publications.....	55
<b>Element 2.9 Marine Spatial Data Infrastructures</b> .....	<b>55</b>
<b>Task 2.9.1</b> Conduct meetings of relevant HSSC WGs dealing with MSDI .....	55
<b>Task 2.9.2</b> Maintain and extend the relevant IHO standards, specifications and publications .....	56
<b>Element 2.10 Hydrographic Data Acquisition and Processing</b> .....	<b>56</b>
<b>Task 2.10.2</b> Maintain and extend, when required, the relevant IHO standards, specifications and publications .....	56
<b>Element 2.11 Hydrographic Dictionary</b> .....	<b>56</b>
<b>Task 2.11.1</b> Maintain and extend the IHO Hydrographic Dictionary in English, French and Spanish .....	57
<b>Task 2.11.2</b> Develop the Spanish language Wiki version of S-32 .....	57
<b>Element 2.12 ABLOS</b> .....	<b>57</b>
<b>Task 2.12.1</b> Organize and prepare ABLOS annual business meeting.....	57
<b>Task 2.12.2</b> Organize and prepare the biennial ABLOS Conference.....	57
<b>Task 2.12.3</b> Contribute to the revision of IHO publication C-51 - TALOS Manual....	57

<b>WORK PROGRAMME 3 - INTER-REGIONAL COORDINATION AND SUPPORT .....</b>	<b>59</b>
<b>Introduction.....</b>	<b>59</b>
<b>Element 3.0 Inter-Regional Coordination Committee (IRCC).....</b>	<b>59</b>
<b>Task 3.0.1</b> Conduct annual meeting of IRCC .....	59
<b>Element 3.1 Co-operation with Member States and attendance at relevant meetings .....</b>	<b>61</b>
<b>Task 3.1.1</b> Arctic Region Hydrographic Commission.....	61
<b>Task 3.1.2</b> Baltic Sea Hydrographic Commission.....	61
<b>Task 3.1.3</b> East Asia Hydrographic Commission.....	62
<b>Task 3.1.4</b> Eastern Atlantic Hydrographic Commission.....	63
<b>Task 3.1.5</b> Meso-American and Caribbean Hydrographic Commission.....	63
<b>Task 3.1.6</b> Mediterranean and Black Seas Hydrographic Commission .....	65
<b>Task 3.1.7</b> Nordic Hydrographic Commission .....	66
<b>Task 3.1.8</b> North Indian Ocean Hydrographic Commission .....	67
<b>Task 3.1.9</b> North Sea Hydrographic Commission.....	67
<b>Task 3.1.10</b> ROPME Sea Area Hydrographic Commission .....	68
<b>Task 3.1.11</b> Southern African and Islands Hydrographic Commission Conference .	69
<b>Task 3.1.12</b> South East Pacific Regional Hydrographic Commission .....	69
<b>Task 3.1.13</b> South West Atlantic Hydrographic Commission .....	70
<b>Task 3.1.14</b> South West Pacific Hydrographic Commission .....	71
<b>Task 3.1.15</b> USA-Canada Hydrographic Commission.....	71
<b>Task 3.1.16</b> IHO Hydrographic Commission on Antarctica .....	72
<b>Task 3.1.17</b> WEND Working Group .....	73
<b>Task 3.1.18</b> Industry participation in RHC meetings .....	74
<b>Task 3.1.19</b> Contribute to improving the framework of IHO response to marine disasters .....	74
<b>Element 3.2 Increase participation by non-Member States .....</b>	<b>74</b>
<b>Element 3.3 Capacity Building Management.....</b>	<b>76</b>
<b>Task 3.3.1</b> Capacity Building Sub-Committee .....	76
<b>Task 3.3.2</b> Capacity Building Fund Management.....	77
<b>Task 3.3.3</b> Meeting with other organizations, funding agencies, private sector and academia .....	78
<b>Task 3.3.4</b> IHO Capacity Building Strategy .....	79
<b>Task 3.3.5</b> Capacity Building Work Programme .....	79
<b>Task 3.3.6</b> Follow-up of CB activities and initiatives.....	79
<b>Task 3.3.7</b> FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) .....	79
<b>Task 3.3.8</b> Provide guidance to training institutions .....	80
<b>Element 3.4 Capacity Building Assessment .....</b>	<b>81</b>
<b>Task 3.4.1</b> Technical and Advisory Visits .....	81

<b>Task 3.4.2</b>	Review existing CB procedures and develop new ones.....	81
<b>Task 3.4.3</b>	Enhance publication C-55 .....	81
<b>Element 3.5</b>	<b>Capacity Building Provision .....</b>	<b>82</b>
<b>Task 3.5.1</b>	Raise awareness on the importance of hydrography .....	82
<b>Task 3.5.2</b>	Technical workshops, seminars, short courses .....	82
<b>Task 3.5.3</b>	Hydrographic and Nautical Cartography Courses.....	83
<b>Task 3.5.4</b>	On the Job Training (ashore / on board).....	83
<b>Task 3.5.5</b>	IHB, to ensure awareness of multilateral or bilateral projects with hydrographic and/or cartographic components, and to provide advice to governments, project managers and funding agencies on the importance of including a hydrographic Capacity Building Component.....	83
<b>Task 3.5.6</b>	CBSC to foster bilateral agreements in order to help satisfy SOLAS V/9.....	83
<b>Element 3.6</b>	<b>Coordination of Global Surveying and Charting.....</b>	<b>83</b>
<b>Task 3.6.1</b>	Publication C-55: status of hydrographic surveying and nautical charting worldwide.....	83
<b>Task 3.6.2</b>	WEND WG to foster the implementation of the WEND principles, monitor progress and report to IRCC.....	84
<b>Task 3.6.3</b>	RHC to coordinate ENC schemes, consistency and quality .....	84
<b>Task 3.6.4</b>	Maintenance of INT chart schemes and improvements of availability of the INT chart series .....	85
<b>Element 3.7</b>	<b>Maritime Safety Information.....</b>	<b>85</b>
<b>Task 3.7.1</b>	Sub-Committee on the World-Wide Navigational Warning Service .....	85
<b>Task 3.7.2</b>	WWNWS Document Review Working Group.....	86
<b>Task 3.7.3</b>	Maintain and extend the following IHO standards, specifications and publications.....	86
<b>Task 3.7.4</b>	Liaise with IMO and WMO on the delivery of MSI within the GMDSS ....	86
<b>Task 3.7.5</b>	Contribute to the IMO work items on the modernization of GMDSS.....	87
<b>Task 3.7.6</b>	Improve the delivery and exploitation of MSI to global shipping by taking full advantage of technological developments .....	87
<b>Element 3.8</b>	<b>Ocean Mapping Programme .....</b>	<b>87</b>
<b>Task 3.8.1</b>	Conduct meetings of relevant GEBCO bodies:.....	88
-	<i>Task 3.8.1.1</i> GEBCO Guiding Committee .....	88
-	<i>Tasks 3.8.1.2 and 3.8.1.3</i> Technical Sub-Committee on Ocean Mapping (TSCOM) and Sub-Committee on Regional Undersea Mapping (SCRUM) .....	88
-	<i>Task 3.8.1.4</i> Sub-Committee on Undersea Feature Names (SCUFN) .....	89
<b>Task 3.8.2</b>	Ensure effective operation of IHO Data Centre for Digital Bathymetry (DCDB).....	89
<b>Task 3.8.3</b>	Encourage the contribution of bathymetric data to the IHO DCDB.....	90
<b>Task 3.8.4</b>	Maintain IHO bathymetric publications .....	90
<b>Task 3.8.5</b>	Contribute to outreach and education about ocean mapping.....	92
<b>Task 3.8.6</b>	GEBCO Web Site kept current and updated regularly .....	92

<b>Task 3.8.7</b> Develop short course and course material on compiling DBMs .....	93
<b>Task 3.8.8</b> Update and enhance the GEBCO Gazetteer (B-8) for internet access ..	93

## **APPENDICES**

<b>Appendix I</b> - IHO/IHB Output Statistics .....	95
<b>Appendix II</b> - New and Revised IHO Publications .....	97
<b>Appendix III</b> - List of IHB Missions 2013.....	101
<b>Appendix IV</b> - Status Report on Performance Monitoring .....	104
<b>Appendix V</b> - IHB Directing Committee Responsibilities.....	112
<b>Appendix VI</b> - IHB Staff Responsibilities .....	114
<b>Appendix VII</b> - Organizational Diagram .....	115



# INTRODUCTION

The Directing Committee is pleased to present the Annual Report of the activities of the Organization for 2013. This report provides an account of the principal activities and achievements of the IHO, the subordinate bodies of the Organization and the IHB during the year. The report also describes the cooperation and participation of other international organizations and stakeholders in the execution of the IHO Work Programme (WP).

## **This Report consists of two parts:**

### **Part 1–General**

Part 1 provides short summary reports and observations on the execution of the IHO Work Programme. Part 1 is structured based on the three parts of the Work Programme: Corporate Affairs, Hydrographic Services and Standards and Inter-Regional Coordination and Support. In this way the Report is also directly related to the technical structure of the Organization which is based on the Secretariat (Corporate Affairs) function and the two principal Committees, the Hydrographic Services and Standards Committee and the Inter-Regional Coordination Committee. As far as possible, Part 1 of the Report follows the same structure and uses the same headings as in the approved Work Programme.

### **Part 2 – Finance**

Part 2 provides the financial statement and accounts for 2013 together with the report of the external auditor.

## **Summary and Highlights**

The scope of activity under the IHO Work Programme continued to grow, particularly in terms of the IHO's interaction with other international organizations, such as the European Union (EU), the International Maritime Organization (IMO), the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) and the various international organizations seeking to use the IHO S-100 geospatial data transfer standard, particularly in support of the IMO e-Navigation initiative. This impacts directly on both the financial and personnel resources available at the IHB, which are now coming under strain. A summary of the long term evolution of the output statistics for the IHO is shown in **Appendix I**,

### **Technical Programme**

The technical programme remained focused on developing the S-100 series of new standards while keeping the current IHO standards fit for purpose. Intense work continued on the development of S-100 and S-101, the future ENC Product Specification based on S-100. A master plan was prepared to monitor the development and implementation of S-100 and a more detailed roadmap was drafted to monitor the development and implementation of S-101. The completion of the first draft of S-101 was delayed due to lack of resources and is now expected in 2014. Work on developing a test strategy was undertaken. Good progress was made, although slower than expected, in revising various IHO standards related to ECDIS in order to address the anomalous operation of ENC data in some ECDIS. This work is being closely coordinated with the International Electrotechnical Commission (IEC) to ensure harmony with the IEC testing standard for ECDIS - IEC 61174. The revision of S-4 -

Chart Specifications of the IHO reached its final stage: the last section to undergo a complete review was submitted to Member States for approval in December. The final draft of the 5<sup>th</sup> edition of *C-51 - A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea – 1982* was submitted to Member States for approval in November.

The Hydrographic Services and Standards Committee agreed the principles for a revised arrangement of its subordinate working groups to acknowledge the changing focus from paper to digital data based products and services and to best use limited resources. A correspondence group was set up to develop the details of the new structure and to consider the appropriate transition arrangements. The Committee will also need to be more realistic in setting its work plan, noting that less of 20% of the approved work items were completed by the expected deadline in 2013.

### **Capacity Building Programme**

The level of activity of the IHO Capacity Building Programme continued to increase and was further boosted by fewer cancellations or postponements of approved activities than in previous years. The programme continued to benefit from significant financial contributions made by the Republic of Korea and the Nippon Foundation of Japan. The Capacity Building Sub-Committee progressed its review of the IHO Capacity Building Strategy as instructed by the XVIII<sup>th</sup> International Hydrographic Conference.

### **ENC Coverage**

Work continued towards achieving comprehensive global ENC coverage and addressing the persistent issues of the elimination of gaps and overlaps, and ensuring that the data contained in ENCs is consistent with the corresponding paper charts. In the context of the implementation of the Worldwide Electronic Navigational Chart Database (WEND) concept, work continued on the development of the concept of an IHO Regional / Worldwide ENC Coordinating Centre, but with no firm proposals being developed.

The concept of using crowd-sourced bathymetry and satellite-derived bathymetry to address the lack of bathymetric data in many areas of the world was discussed in a number of forums during the year. Such techniques appear likely to require further consideration by the IHO in the near future.

### **Performance Monitoring**

Performance Monitoring statistics are presented in this Annual Report for the second year in succession. Unfortunately, a significant number of the Performance Indicators, particularly those related to Programme 3, have been difficult or impossible to evaluate properly for 2013. This is because of the lack of input from many of the Regional Hydrographic Commissions and some of the IHO bodies.

### **High Level Awareness of IHO**

The Directing Committee continued in its efforts to raise the profile and awareness of the Organization and its objectives at higher diplomatic levels. The Directing Committee also took every opportunity to assist those States that have not yet indicated their position on the Protocol of Amendments to the Convention on the IHO and on applications for membership of the IHO.

### **Status of Approvals**

At the end of 2013 the status of approvals of the Protocol of Amendments to the Convention on the IHO and applications for membership of the IHO was as follows:

Approval of the Protocol of Amendments to the Convention 39 approvals of 48 required.

Approval of applications to join the IHO:

Brunei	36 approvals of 52 required
Georgia	38 approvals of 52 required
Viet Nam	41 approvals of 52 required

### **Financial Situation of the IHO**

As indicated in Part 2 of this Report, the financial situation of the Organization at the end of the year was good. However, several factors, including non-payment of subscriptions by some Member States, rising medical claims and falling levels of reimbursement from insurance and increasing travel costs are beginning to place a strain on the annual budget. These matters will be highlighted at the Fifth Extraordinary International Hydrographic Conference to be held in 2014.

### **Conclusion**

In conclusion, the Directing Committee, on behalf of all IHO Member States, would like to express its gratitude to HSH Prince Albert II of Monaco and His Government for the continuing generous support and interest in the Organization.



# WORK PROGRAMME 1

## Corporate Affairs

### Introduction

IHO Work Programme 1 “Corporate Affairs” covers the provision of the services of the secretariat of the IHO, through the IHB and the management and fostering of relations with other international organizations. Work Programme 1 is executed primarily by the Directing Committee.

### Element 1.1 Co-operation with International Organizations

This element covers liaison and cooperation between the IHO and other international organizations. In 2013, the IHO was represented in most cases by a Director or an Assistant Director. Notable activities during the year are as follows.



*HSH Prince Albert II of Monaco (right of screen) awaits his opportunity to address the ATCM*

#### ***Task 1.1.1 Antarctic Treaty Consultative Meetings (ATCM)***

The IHO was represented by the President at the 36<sup>th</sup> Antarctic Treaty Consultative Meeting in Brussels, Belgium in May. Antarctic Treaty Parties and related Antarctic international bodies met, as they do annually, to discuss matters relating to the management of the Antarctic Treaty area and to further develop the Antarctic Treaty System.

The IHO presented a stark report on the status of hydrographic surveying and charting in Antarctic waters and stressed the fundamental importance of hydrography and an understanding of the nature of the seafloor and its hazards for all activities taking place at sea in Antarctica. Regrettably, the IHO

report prompted no reaction from the 36<sup>th</sup> ATCM comprising the 50 States that were represented.

#### ***Task 1.1.2 Comité International Radio-Maritime (CIRM)***

The Comité International Radio-Maritime (CIRM) held its annual Conference in Cyprus in April. CIRM is the body representing the maritime electronics industry in the development of relevant international regulations and standards and is recognised by the IHO as a Non-Governmental International Organization. CIRM maintained its active role in the IHO

Hydrographic Services and Standards Committee (HSSC), with a number of its members also participating as Expert Contributors on various HSSC Working Groups.



*Visit to the Department of Land and Surveys, Nicosia, Cyprus on the occasion of the CIRM annual Conference  
From left to right: Georgia Papathoma, Andreas Sokratous, Director Gilles Bessero and Giorgos Kokosis*

The meeting was attended by about 130 participants representing more than 50 companies, as well as governmental and non-governmental international organizations such as BIMCO, IALA, IMO, IMSO and RTCM. Director Bessero represented the IHO. He presented a summary of the analysis of the IHO ENC ECDIS Data Portrayal and Performance Check reported by ships and provided a status report on the development of S-100 - *IHO Universal Hydrographic Data Model* and associated product specifications. A representative of the UKHO was also present.

#### ***Task 1.1.3 Council of Managers of National Antarctic Programs (COMNAP)***

#### ***Task 1.1.7 International Association of Antarctic Tour Operators (IAATO)***

COMNAP and IAATO are two of the principal stakeholder organizations that provide input to and collaborate in the work of the IHO Hydrographic Commission on Antarctica (HCA). In 2013, COMNAP and IAATO were both represented at the annual IHO Antarctic Commission meeting (see task 3.1.16). The IHO did not participate in any events or activities organized directly by COMNAP and IAATO in 2013.

#### ***Task 1.1.4 European Union (EU)***

Relations with the EU organization progressed well in 2013 under the Memorandum of Understanding on establishing co-operation on maritime affairs between the IHO and the European Commission (EC). Following the inaugural EC-IHO meeting in 2012, a second meeting took place in Brussels, Belgium in April. The meeting was co-organized by the Directorate-General for Maritime Affairs and Fisheries (DG Mare) and the French Hydrographic Office (SHOM), as Chair of the Working Group on European Union Marine and Maritime Policies of the North Sea Hydrographic Commission (NSHC/EU2MPWG). It was attended by three representatives from the European Commission (DG Mare, DG Environment), eleven representatives from IHO (France, Belgium, Netherlands, Norway, Spain, Sweden, United Kingdom, IHB) and one observer from ETT (Italy), as coordinator of the EMODnet Portal for physical parameters. Director Bessero represented the IHB.

The meeting reviewed the draft report prepared by DG Mare on the outcome of the public consultation on the EU Green Paper “Marine Knowledge 2020”, to which the IHO and national HOs had contributed, and was informed of the preliminary observations of DG Mare on the 2014-2020 budget for EMODnet, the European Marine Observation and Data Network. The implementation of INSPIRE, the infrastructure for spatial information in Europe, and the coordination with IHO and HO activities related with Maritime Spatial Data Infrastructures were discussed. The meeting then debated potential IHO/HO initiatives which could benefit from EU support, focusing on the possibility of developing a European programme of hydrography, acquiring a European LiDAR capacity for coastal mapping, setting up a European coastal vertical reference framework and progressing research on the dynamics of marine sand waves.

A third EC-IHO meeting was hosted by SHOM in Saint-Mandé, France, in June. This meeting was chaired by France, as chair of the NSHC/EU2MPWG. It was attended by one representative from the European Commission (DG Mare), eleven representatives from the IHO (France, Belgium, Greece, Norway, Spain, Sweden, United Kingdom, IHB) and one observer from the French Prime Minister’s Office for European Affairs. Director Bessero represented the IHB. Apologies had been received from Denmark and Germany.



As suggested by the IHB, the IHO representatives met separately before the EC-IHO plenary meeting. They reviewed the outcome of EU-related discussions that took place at the 5<sup>th</sup> meeting of the IHO Inter-Regional Coordination Committee (IRCC) so as to agree ways forward to seek EU support for various activities being undertaken or considered by HOs. A timeline for implementing the relevant IRCC actions was agreed and communication with the appropriate Regional Hydrographic Commissions (RHC) was discussed. It was agreed to prepare a submission to the IHO Hydrographic Services and Standards Committee (HSSC) on tasking its Marine Spatial Data Infrastructure Working Group (MSDIWG) to assess the implementation of the INSPIRE framework in relation to hydrography and to develop recommendations on how best to meet the requirements of the EU initiative “Marine Knowledge 2020”.

The plenary meeting that followed reviewed three IHO initiatives that could benefit from EU support and discussed how they should be progressed. These initiatives related to the proposed “European Programme for Hydrographic Knowledge 2020”, seamless land-sea mapping and the development and maintenance of accurate vertical reference frameworks (in liaison with the IHO Tidal and Water Level Working Group and the NSHC Tidal Working Group). The connection with the progress of the EU initiative “Marine Knowledge 2020” and a recent EC proposal for an EU Directive on integrated coastal management and marine spatial planning was discussed. The discussion highlighted the relevance of the IHO Publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide* and of promoting the use of S-100 in ensuring the interoperability of the various components of EMODnet.

A 4<sup>th</sup> EC-IHO meeting was hosted by the Flemish Hydrographic Office of Belgium (Vlaamse Hydrografie) in Brussels in October. The meeting was again chaired by France, as Chair of the NSHC/EU2MPWG. The meeting was attended by two representatives from the European Commission (DG Mare), thirteen representatives from IHO Member States (France, Belgium, Germany, Greece, Netherlands, Norway, Spain, Sweden and the United Kingdom), the IHB, and three observers from Ireland (Geological Survey) and Italy (Istituto Superiore per la Protezione e la Ricerca Ambientale). Director Bessero represented the IHB.

The HOs, IHB and observer representatives met separately before the EC-IHO plenary meeting. They reviewed HO and IHO activity concerning various European initiatives (European Sustainable Shipping Forum; UN-GGIM Europe, etc.) and the progress being made in developing a proposal for a design study to support a future joint European coastal mapping programme (JECMaP).

The plenary meeting reviewed progress in developing IHO initiatives that could attract EU support. The main initiative under discussion related to JECMaP. A proposal led by France (SHOM) for a design study was under development and should be completed in time to respond to a request for proposals from the EC in September 2014. Other initiatives, dealing with the development of an accurate vertical reference framework and the impact of sea-floor dynamics on re-survey strategy, have a longer timeframe. The meeting was informed that further input on the respective roles of HOs and industry in



the future development of EMODnet would be welcomed by the EC. DG Mare emphasized that “blue growth” would be a common thread for future EU regional funding.

It was agreed to hold the 5<sup>th</sup> IHO-EC meeting in February or March 2014, back to back with another related event if possible.

#### **Task 1.1.5 International Federation of Surveyors (FIG)**

The IHO did not participate in any events or activities organized directly by the FIG in 2013. Nevertheless, liaison between the two organizations continued to flourish through meetings between the President of the Directing Committee and Mr Chee Hai Teo, President of FIG, at the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) and through contact with a number of the officers of FIG Commission 4 (Hydrography) at IHO outreach and other events. In addition, work continued in the FIG-IHO-ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) which is reported under Programme 3.

#### **Task 1.1.6 International Federation of Hydrographic Societies (IFHS)**

The relationship between the IHO and IFHS took a significant step forward during the year with a coordinated stakeholders’ event in the form of a conference called “*Digital Hydrography on the Maritime Web / Embracing the Challenges and Opportunities*”, taking place in Southampton, UK, hosted by the Hydrographic Society UK (THS UK). The Conference was supported by the IHO and the IFHS as a means of outreach and engagement with their common stakeholders. The conference is reported under task 1.4.3 later in this report.



### **Task 1.1.8 International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)**

Close cooperation with IALA continued throughout the year. Regular discussions and informal contact were maintained as part of IMO and other meetings where both organizations were represented. In addition, Director Gilles Bessero represented the IHO at an e-Navigation conference jointly organized in January by IALA and the Danish Maritime Authority on the Baltic Sea ferry *Pearl Seaways* and supported by the Nautical Institute (UK), CIRM, and the ACCSEAS Project. The Conference was attended by representatives from national maritime administrations, hydrographic offices (Denmark and France), industry and international organizations (BIMCO, CIRM, IALA, ICS, IHO, IMO, IMPA). Director Bessero represented the IHO and gave a presentation on “*IHO S-100, an essential contribution to e-Navigation and Maritime Spatial Planning*”. See also Task 2.2.5 under Programme 2.



*View of the audience during the scene-setting presentation by John Erik Hagen, Coordinator of the IMO Correspondence Group on e-Navigation*

In his opening statement at the Conference, the IALA Secretary General acknowledged the IHO contribution to the development of e-Navigation. Several speakers addressed the use of S-100 as the baseline standard for e-Navigation data access and services, thus confirming the onus placed upon the IHO to deliver and maintain a dependable standard and its associated support mechanisms.

The President represented the IHO as an Observer at the 13<sup>th</sup> meeting of the IALA e-Navigation Committee at the IALA Headquarters in March. The IALA e-Navigation Committee was established to address various relevant aspects of the e-Navigation concept being

developed by the IMO and to provide appropriate input to the IMO for consideration.

The principal topic of interest to the IHO that was discussed by the Committee was work on using S-100 as the basis for IALA data modelling and data exchange requirements. In this regard, the meeting endorsed the preparatory work undertaken by one of its seven Working Groups. The Data Modelling and Interfacing Working Group continued its activity on S-100 based Product Specifications for an IALA Inter VTS (Vessel Traffic Service) Exchange format (IVEF) and an Aids to Navigation metadata exchange standard. The Working Group also completed a number of draft procedural documents, based on existing IHO documentation, that were to be used during an IALA workshop on “*Developing S100 Product Specifications for e-Navigation*” which took place in June at the IALA Headquarters.

The IHO was represented at that workshop by Mr Tom Richardson from the UKHO and Mr Eivind Mong from Jeppesen, both active members of the IHO Transfer Standard Maintenance and Application Development Working Group (TSMAD). The meeting comprised participants representing 17 countries. The workshop was successful in assisting IALA to use S-100.

The IHB continued to lend support and advice to the IALA secretariat concerning the IALA World Wide Academy (IALA-WWA). The Academy is, in effect, the IALA Capacity Building Programme. It is modelled, in large part, on the IHO CB Programme and experience.

Representatives from the IALA-WWA participated in a number of the meetings of the RHCs during the year as well as various cooperative capacity building activities with the IHO and IMO.

### **Task 1.1.9 International Association of Ports and Harbours**

There was no communication between the IHB and International Association of Ports and Harbours (IAPH) in 2013.

### **Task 1.1.10 International Cartographic Association (ICA)**

Cooperation and discussion between the officers of ICA and the IHB continued during the year. The President of ICA, Professor Georg Gartner, welcomed the President and Assistant Director Huet to the 26<sup>th</sup> International Cartographic Conference (ICC 2013) in Dresden in August. The President provided an opening address at the Conference in which he highlighted the work of the IHO and in particular, the work of the ICA representatives on the IBSC. Running in parallel to the ICC 2013 map exhibition, an IHO cartographic exhibition was mounted, organized by the IHB with the assistance of the German Hydrographic Office (BSH). The following Hydrographic Offices participated in the IHO display: Chile, Finland, France, Germany, Mexico, Romania, Spain, Ukraine and United Kingdom. Some other HOs had chosen to exhibit nautical charts as part of their national displays in the ICA map exhibition, including Japan, Norway, Slovenia and Sweden.

Prior to ICC 2013, Assistant Director Huet represented the IHB at a meeting of the ICA Commission on Geoinformation Infrastructures and Standards. This ICA Commission conducts research on the development and implementation of spatial data infrastructures (SDIs) at the global, regional, national and local levels, and of the theory behind them.

### **Task 1.1.11 International Electrotechnical Commission (IEC)**

Liaison with IEC takes place on more than one level. The TSMAD and the Digital Information Portrayal Working Group (DIPWG) maintain close relationships with IEC Technical Committee 80 (IEC-TC80) which is responsible for the maintenance of the IEC 61174 standard. IEC 61174 is the testing standard used for ECDIS type-approval. The following IHO standards are all normative references in IEC 61174: S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*, S-57 - Appendix B.1 - *ENC Product Specification*, S-63 - *IHO Data Protection Scheme* and S-64 - *IHO Test Data Sets for ECDIS*. IEC 61174 is also relevant to the implementation of the S-101 ENC Product Specification.

In response to a number of ECDIS anomalies that had been identified by the IHO and IMO in 2012 and which were being monitored by the IHO, IEC-TC80 established a maintenance team to revise the current edition of IEC 61174 in order to address these issues. The task is due to be completed by September 2015. Input was provided by TSMAD and DIPWG to ensure that the new edition of the IEC 61174 will remain in harmony with the relevant IHO standards.

At its meeting in September, IEC TC80 acknowledged that the IMO had decided to adopt the IHO S-100 standard as the baseline data transfer standard for e-Navigation. It is anticipated that the development of a new supporting IEC standard (IEC-61162) may lead to a requirement for additional objects and attributes to be included in the IHO S-100 Registry.



### **Task 1.1.12 International Maritime Organization (IMO)**

The excellent levels of liaison and cooperation with the IMO Secretariat continued in 2013. The IHO and IMO Secretariats communicated regularly and effectively on all matters of mutual interest, covering such things as technical issues related to the implementation of ECDIS as a carriage requirement, Capacity Building programmes, and the World-Wide Navigational Warning Service (WWNWS).

The IHO was represented by the IHB at all significant meetings of the IMO where hydrographic and chart related issues were discussed. The scope of activity being undertaken in the IMO programme involving IHO matters resulted in the need for an increased level of participation from the IHB than in previous years. This was due to the continuing development of an IMO e-Navigation strategy and the development of an IMO Polar Code - both of which have significant underlying charting aspects that needed to be brought to the attention of the IMO.

Meetings attended by the IHB included the 28<sup>th</sup> session of the IMO Assembly, the 110<sup>th</sup> session of the Council, the 92<sup>nd</sup> session of the Maritime Safety Committee (MSC); the 59<sup>th</sup> session of the Sub-Committee on Safety of Navigation (NAV); the 57<sup>th</sup> session of the Sub-Committee on Design and Equipment (DE), the 17<sup>th</sup> session of the Subcommittee on Radiocommunications and Search and Rescue (COMSAR); the 63<sup>rd</sup> session of the Technical Cooperation Committee (TC) and the intersessional meeting of the Polar Code WG. The IHB attended also the IMO Symposium on Future Ship Safety and the IMO celebration of the World Maritime Day (see task 1.3.4).

Of particular interest to the IHO, the Assembly unanimously approved an Agreement of Cooperation between the IHO and the IMO (see CL 8 & 29/2013). The Agreement reaffirms the long-standing relationship and cooperation between the two organizations. During his introduction of the Agreement, which had been endorsed by IHO Member States and by the IMO Council, the Secretary General re-iterated his support for the IHO, highlighting the similarities between the IMO and IHO and their common purpose for the improvement of safety of navigation. The Secretary General provided comparative figures between IMO and IHO Member State numbers and drew attention to the lack of progress in IMO Member States joining the IHO; he ended by strongly urging IMO Member States to give favourable consideration to joining the IHO.

The Assembly agreed the transition from the Voluntary IMO Member State Audit Scheme to an IMO Member State Mandatory Audit Scheme. The scheme includes the assessment of the provision of national hydrographic services in the countries being audited. The Assembly also agreed the restructuring of the Sub-committees that report to its Maritime Safety Committee by reducing their number but in some cases, increasing the scope of activity. This will have some impact on how many IHB staff may be required to attend some Subcommittee meetings if various topics are dealt with in parallel at a single meeting.

The 92<sup>nd</sup> session of MSC endorsed the proposals put forward by the 17<sup>th</sup> session of COMSAR related to the promulgation of Maritime Safety Information; in particular, the revisions to IMO Assembly Resolutions 705(17) on the Promulgation of Maritime Safety Information, 706(17) on the World-Wide Navigational Warning Service and the proposed amendments to Annex 7 of MSC.1/Circ.1382/Rev.1 containing the Questionnaire on Shore-based Facilities for the Global Maritime Distress and Safety System (GMDSS). It also addressed a number of issues related to hydrography and nautical charting.

**ECDIS.** MSC considered various documents relating to operating anomalies identified within ECDIS, including a status report from the IHO. MSC recognised the need for continuous monitoring of the implementation of ECDIS and any issues subsequently arising. There was also need to continue to raise the awareness of mariners to the existence of operating anomalies in some ECDIS being used at sea. At the 59<sup>th</sup> session of NAV, the IHO was commended for its leadership over the issues and the technical workshops that it had held to coordinate activities between the various stakeholder organizations.

**Polar Code.** In relation to the Polar Code, the IHO highlighted the inadequate state of hydrographic surveying and charting in the polar regions and urged the MSC to encourage all coastal States to meet their obligations for providing appropriate hydrographic and nautical charting services in accordance with Regulation 9 of SOLAS Chapter V. The IHO received strong support from a number of the delegations.

**e-Navigation Strategy.** The IHO, mainly through input from the IHB, contributed to the continuing development of an IMO e-Navigation strategy. Of particular note was the endorsement by MSC of the IHO S-100 standard as the baseline for creating a framework for data access and services under the scope of e-Navigation and the relevant parts of the Convention for Safety of Life at Sea (SOLAS). This recognition by IMO places S-100 in an important position that goes well beyond its original purpose of providing a standard that would enhance the use and accessibility of digital hydrographic data and information.

MSC authorised the establishment of a joint IMO/IHO Harmonization Group on Data Modelling. The principal objective of the group will be to provide the overarching coordination of data exchange standards used in an e-Navigation environment. The harmonization group will remain dormant until such time as work items are identified for its consideration.

#### ***Task 1.1.13 International Maritime Pilots Association (IMPA)***

No formal activities took place between IHO and IMPA during the year. Nevertheless contact was maintained through informal meetings between the staff of the secretariats of the two organizations. This took place primarily at various meetings held by the IMO, where both IHO and IMPA were represented.

#### ***Task 1.1.14 Intergovernmental Oceanographic Commission (IOC)***

Cooperation between the IHO and IOC takes place at several levels. The detailed work of the IHO-IOC GEBCO programme falls under IHO Programme 3 and is described later in this report. Liaison with the Joint Technical Commission of the World Meteorological Organization (WMO) and the IOC for Oceanography and Marine Meteorology (JCOMM) is reported under task 1.1.19. Representation at the 46<sup>th</sup> Executive Council of IOC and liaison with the IOC Secretariat is reported here.

The President and Assistant Director Wyatt visited the IOC secretariat in February. Reductions in its budget have continued to impact on IOC activities. In recent years this has meant that financial support from IOC for the IHO-IOC GEBCO programme has all but disappeared, leaving the IHO and donor organizations to support the programme alone. The Executive Secretary of IOC, Dr Watson-Wright and the President discussed the future of the GEBCO programme and improvements to its accountability and governance arrangements so as to ensure that its continuing operation could be assured.

Director Iptes represented the IHO at the 27<sup>th</sup> session of the IOC Assembly in Paris, France in June. The national Hydrographers of Brazil, Canada, Chile, Germany and Turkey were among the five of 58 Member States represented at the meeting. The meeting received a presentation on the activities of the IHO-IOC GEBCO project. The presentation covered data gathering efforts, progress in the regional mapping programme and the continued success of the Nippon Foundation GEBCO scholars programme undertaken at the University of New Hampshire, USA. The IOC Members States gave strong support to the IHO request that oceanographic projects gather and submit ocean bathymetric data to the IHO Data Centre for Digital Bathymetry (DCDB). This was an acknowledgement that valuable data gathering opportunities were being missed and that important data was being discarded. Strong endorsement was expressed for IOC to continue its support and involvement with the IHO-IOC GEBCO project.

### **Task 1.1.15 International Organization for Standardization (ISO)**

ISO Technical Committee 211 (TC211) is responsible for the development of the ISO19100 series of standards for geospatial information upon which the IHO S-100 framework standard and the supporting IHO Geospatial Information Infrastructure Registry is based. The IHO has for a long time been a liaison member of ISO TC211 and participates in its standards development activities. The work of ISO TC211 is directly relevant to HSSC and its working groups.

At the request of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM – see task 1.1.18), ISO TC 211 led the preparation of a report on the status of geospatial standards in liaison with the IHO, represented by the IHB (see CL 21/2013) and the Open Geospatial Consortium (OGC).

Assistant Director Pharaoh represented the IHO at the 36<sup>th</sup> and 37<sup>th</sup> working group and plenary meetings of TC211 that took place in Busan, Republic of Korea in May and in Redlands, California, USA in November. At the 37<sup>th</sup> meeting, the Committee established a task force to liaise with the IHO and OGC to draft a follow-on report to UN-GGIM on core essential standards and their implementation.

### **Task 1.1.16 Joint Board of GIS (JB-GIS)**

The JB-GIS comprises the heads of the secretariats or executive committees of a number of international organizations concerned with geospatial information. The purpose of the JB-GIS is to provide, where possible, a collective and unified voice at the international level regarding geospatial affairs, especially to the United Nations and to other global geospatial information stakeholders. Its second goal is to assist in the coordination of relevant activities between the organizations represented by the members of the JB-GIS.

The President represented the IHO at the annual meeting of the JB-GIS, held in Potsdam in August. The following organizations were also represented: FIG, the Global Spatial Data Infrastructure Association (GSDI), International Association of Geodesy (IAG), ICA, the IEEE Geoscience and Remote Sensing Society (GRSS), the International Geographic Union (IGU), the International Map Industry Association (IMIA) and the International Society for Photogrammetry and Remote Sensing (ISPRS).

The Board reviewed the progress that had been made; in particular, the success in raising the profile of the participating organizations in the UN-GGIM and also the completion and publication of a booklet: *Best Practices on Geo-information for Risk and Disaster Management*.

### **Task 1.1.17 NATO Geospatial Bodies**

The Defence Geospatial Information Working Group (DGIWG) is the working group in the North Atlantic Treaty Organization (NATO) tasked with progressing geospatial standardization across the defence organizations of its Member States. Cooperation between the IHO and the DGIWG continued in 2013, primarily through representation by the UKHO, to ensure, wherever possible, harmonization between DGIWG and IHO in their respective work activities.

### **Task 1.1.18 United Nations Organization (UN)**

In addition to liaison and cooperation with the IMO and IOC, which are bodies of the UN, the IHO also enjoys observer status in the UN General Assembly and participates in various UN bodies whose secretariat is at the UN Headquarters in New York.

**UN-GGIM.** The UN Committee of Experts on Global Geospatial Information Management seeks to advance international cooperation in geospatial information management by making

accurate and authoritative geospatial information readily available, particularly in support of advancing sustainable development. The UN-GGIM reports to the UN General Assembly via the UN Economic and Social Council (ECOSOC). ECOSOC has instructed UN-GGIM to work according to a five-year programme and to provide its first report in 2016.

The work of the UN-GGIM is of relevance to the IHO, particularly in relation to the continuing development of spatial data infrastructures around the world, and the role that IHO Member States can play in the provision of fundamental data and information covering the maritime domain.

The Second High Level Forum on Global Geospatial Information Management was convened by the Secretariat of the UN-GGIM, in collaboration with the Government of Qatar.



It was held in Doha, Qatar in February. Although the overwhelming majority of participants represented the land mapping sector, a number of presentations included the maritime domain. The role of the IHO in developing geospatial standards was duly acknowledged, notably in the presentation by the Chair of ISO/TC211. The Forum was preceded by an Exchange Forum attended by representatives from the private sector, governments, international organizations and the research community and moderated by the JB-GIS. Director Bessero represented the IHO and chaired one of the four sessions of the Exchange Forum. The forum brought together representatives from 60 countries, several international organizations and the private sector.



*Co-Chair of GGIM-3 and Director General and CEO of the UK Ordnance Survey, Dr. Vanessa Lawrence, CB*

The third session of the UN-GGIM took place in Cambridge, UK in July. Over 70 UN Member States were represented together with representatives from nearly 20 international organizations, including the IHO. The President represented the IHO (see CL 48/2013).

A number of the agenda items generated discussions that were of relevance to IHO Member States, particularly those that are planning or are already contributing hydrographic data and services to their national spatial data infrastructure.



Of particular importance for IHO Member States is the growing acknowledgement and awareness by UN-GGIM of the relevance and the potential contribution of hydrographic information in the context of global geospatial data infrastructures. This also emphasizes the importance of the IHO-IOC GEBCO project as a fundamental part of the global geospatial information infrastructure.

**International Tribunal on the Law of the Sea (ITLoS).** In August the IHB received eight students attending the nine-month course, funded by the Nippon Foundation, at ITLoS in Hamburg, Germany. The students were from Brazil, Comoros, Haiti, Indonesia, Lebanon, Philippines, Tanzania and Tunisia. The visit was part of the International Liaison section of the course. The visitors were given a briefing on “*Hydrography and UNCLOS*”.



*ITLoS Nippon training programme group at the IHB*

### **Task 1.1.19 World Meteorological Organization (WMO)**

The principal interaction between IHO and WMO is through the WWNWS Sub-Committee (WWNWS-SC) that monitors and guides the IHO/IMO World Wide Navigational Warning Service (WWNWS) which includes NAVAREA and coastal warnings. The progress of the WWNWS-SC is described in section 3 of this report. Informal liaison is also maintained at various IMO meeting in which IHO and WMO participate.

IHO was also represented at meetings of the JCOMM Expert Team on Maritime Safety Services (ETMSS) and the Expert Team on Sea Ice (ETSI), which have increasing relevance to the IHO as the development of S-100 Product Specifications are progressed for met-ocean forecasts and for the limits of sea ice. In addition to a more general up-date on relevant activities, the IHO provided briefings on the IHO’s Universal Hydrographic Data Model (S-100) focusing on supporting e-Navigation and Maritime Spatial Planning. Dr Vasili Smolianitsky of the Russian Federation and Chair of the JCOMM ETSI provided information on mandatory sea ice information to be included in MSI and proposed rules for its description in GMDSS SafetyNET and NAVTEX bulletins. Dr Smolianitsky gave a presentation on the Sea Ice Feature Catalogue progress and highlighted the need for engagement with the IHO and TSMAD to progress S-100 issues and the creation of a WMO Domain in the S-100 Registry for a Met-Ocean Feature Catalogue.

**Task 1.1.20 Other Organizations when their agendas have relevance to the programme of the IHO**

- **Pan American Institute of Geography and History (PAIGH)**

IHO activity with PAIGH is centred on development activities underway in the Meso-American and Caribbean Hydrographic Commission (MACHC). Mr Paul Cooper represented PAIGH at the 14<sup>th</sup> meeting of the MACHC. A brief report of this meeting is included under Programme 3.

- **Maritime Organization for West and Central Africa (MOWCA)**

- **Port Management Association West and Central Africa (PMWCA)**

- **Mauritania.** A regional seminar on safety of navigation sponsored and organized by the IMO was held in Nouakchott, Mauritania, in September in collaboration with the IHO and the IALA-WWA. The seminar was hosted by the Directorate of Merchant Shipping of Mauritania. The IHO was represented by Director Bessero who provided briefings on current hydrographic and charting issues, including the provision of hydrographic services, the collection and promulgation of marine safety information, and ECDIS matters. He also presented the role and organization of the IHO and its Capacity Building Programme.



*Some of the participants during a working session*



*A participant receives his attendance certificate*

The seminar in Mauritania was aimed at French-speaking countries bordering the Eastern Atlantic. It was opened by the Minister of Fisheries and Maritime Economy, accompanied by the Minister of Infrastructures and Transport and was attended by about thirty senior management and technical administrators in charge of safety of navigation from Benin, Congo, Côte d'Ivoire, Democratic Republic of Congo, Gabon, Guinea, Guinea Bissau, Mauritania, Morocco, Senegal, Togo and two representatives of the Maritime Organization for West and Central Africa (MOWCA).

- **Republic of Congo.** A sub-regional workshop was held in Pointe-Noire, Republic of the Congo in November. The workshop was organized by MOWCA, in cooperation with the Eastern Atlantic Hydrographic Commission (EAtHC) and the IHB. The IHO was represented by Ingénieur Général Frachon, France, Chair of the EAtHC, and Director Bessero. About fifty senior management and technical administrators from Angola, Republic of the Congo, Gabon, Mauritania and Senegal attended the workshop.



The workshop was intended to raise awareness among authorities in the region that are responsible for maritime safety by providing an overview of the importance of hydrography, the organization and role and activities of the IHO, options for the provision of hydrographic services and the advantages of joining the IHO and the relevant RHC.



*A delegate addresses the meeting*



*From left to right:  
Ing. Gén. Bruno Frachon, EAtHC Chair,  
Gilles Bessero, IHB Director,  
and Alain Michel Luvambano. MOWCA*

The workshop participants considered positively the possibility of creating a regional training programme in hydrography. They also considered establishing a Memorandum of Understanding on cooperation between MOWCA and the IHO.

## **Element 1.2 Information Management**

This element has continued to grow in importance. The increasing reliance of the IHO on digital technology for its communications, documentation, record keeping and coordination placed an ever greater emphasis on information management during the year.

### **Task 1.2.1 Maintain and Extend the IHO Website**

The IHO website is a key functional area for the IHO. Access to almost all of the IHO's reference documents is available through the website. From its start in 1998 to 2013, the website has grown from 30 pages giving access to about 400 documents, to 224 pages giving access to over 40,000 documents. In 2013, the policy of publishing bi-lingual (French and English) pages wherever possible continued. As a result, twelve separate single-language pages were amalgamated as six bi-lingual pages. Even so, the total size of the website continued to grow.

The ten most popular web pages in 2013 were:

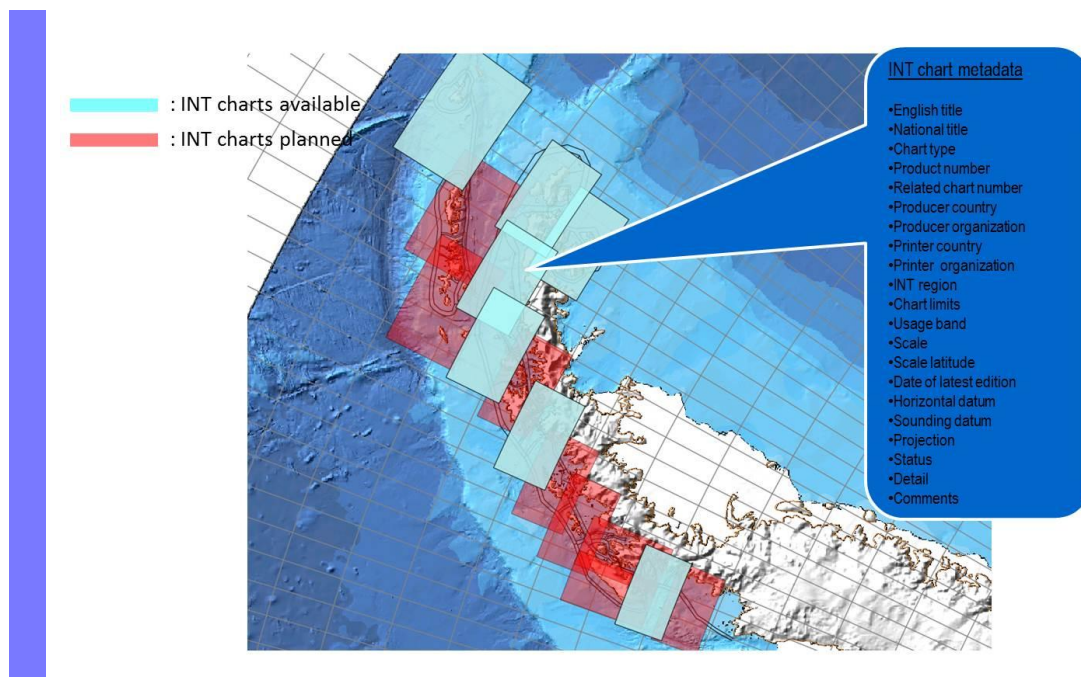
<b>WEB PAGE</b>	<b>HITS</b>
<i>Welcome to IHO</i>	517,000
<i>Standards and Publications</i>	90,300
<i>Committees and WG</i>	66,000
<i>MS Information</i>	56,300
<i>News Links</i>	53,900
<i>International Hydrographic Conference</i>	50,900

<i>Letters and Documents</i>	48,000
<i>ENCs and ECDIS</i>	41,200
<i>About the IHO</i>	26,600
<i>IHB Directing Committee</i>	26,000

### **Task 1.2.2 Develop IHO GIS and Web Server and Web Mapping Services**

Until now, all development work on an IHB Geographic Information System (GIS) framework and associated services to support the requirements of the IHO has been done using open-source (free) software. This has enabled the IHB to provide a number of proof-of-concept demonstrations, such as the IHO Antarctic GIS database, that includes the development of web map servers for the HCA and for the display of undersea feature names (based on the GEBCO gazetteer - B8).

The GIS development work, much of it undertaken by the officers seconded from Japan and the Republic of Korea in recent years, has been instrumental in validating the IHO's user requirement and in the development of a strategic plan for the implementation of an IHB GIS framework that will support the geospatial requirements of the Organization. The framework includes a harmonized model for the development of services such as web catalogues showing ENC and INT chart coverage and metadata.



Further significant progress is now hampered by the limitations of continuing to rely on open-source software, with the associated limitations of poor documentation, lack of training resources and technical support. As a result, the IHB GIS strategic plan envisages moving to a commercial GIS software platform as soon as possible.

During the year improvements were made to the ENC coverage catalogue web map service. However, the effectiveness of the catalogue was impaired by the fact that it continues to be very difficult to identify those ENCs that are not distributed through a RENC.

Mr Satoshi Yamao, the IHB seconded officer from the Japan Hydrographic and Oceanographic Department, completed a project to convert the IHO Yearbook into an online database driven publication. In addition to being able to generate Member States information in a number of different formats, the database also provides content for a map service.

### ***Task 1.2.3 Develop IHB Desktop Publishing Services***

Towards the end of the year, an evaluation of new desk-top publishing software applications was carried out to identify ways to improve the in-house capability to publish and maintain the increasing suite of IHO publications as simultaneous on-line, downloadable and hard copy versions. It was anticipated that new software and relevant training would be purchased in the early part of 2014.

### ***Task 1.2.4 Hydrographic Publications for which there is no specific body in charge***

Almost all IHO publications are now created in-house using desktop publishing techniques. The bulk of documents were made available in digital form and available free of charge via the IHO website. Limited numbers of publications were printed and bound using the facilities at the IHB. The printed versions were produced primarily to provide as examples and references during technical and liaison visits.

A list of new or revised editions of IHO publications published in 2013 is shown in ***Appendix II***.

### ***Task 1.2.5 Maintain and Extend IHB IT Infrastructure***

The IT infrastructure is now a fundamental part of the delivery of IHB services. The maintenance and development of the infrastructure was achieved through a combination of long-standing contract support arrangements, one dedicated member of staff and approximately a third of the time of an Assistant Director. Even so, resources are now stretched to meet all the requirements.

In 2013 a Windows-based SharePoint system was put in place for processing, managing and storing all IHB documentation and correspondence. This replaced the in-house document management system developed and provided gratis by Chile in 2004, but that was no longer meeting the increasingly demanding requirements of the IHB. The new, contemporary system allows for more robust management of IHB documentation and provides greater flexibility in remotely accessing correspondence by Directors and Assistant Directors when they are away from the IHB.

The IHB Wi-Fi infrastructure was upgraded during 2013 by providing new access points, controllers and routers to improve internet connectivity in the IHB Conference Room, especially during the peak loading periods when large meetings are taking place.

By the end of the year the principal components of the IHB IT infrastructure comprised a standard office desktop computer environment; and in addition, 17 physical and virtual internal servers used for proxy services, network storage, mail services, accounting services, anti-virus services, backups; the Wi-Fi infrastructure; the IHB intranet and a Virtual Private Network (VPN) to enable Directors and Assistant Directors to access the IHB network from remote locations. In addition, the IHB is relying on a number of external internet servers to host the IHO website, the IHO S-100 Registry, Web Mapping Services and a development and test environment.

### ***Task 1.2.6 Circular Letters***

During the year, the IHB published 75 Circular Letters (CLs) in the English, French and Spanish languages. In addition, three Finance Circular Letters and six Conference Circular letters were published in English and French. A small number of CLs were distributed directly to recognised Non-Governmental International Organizations and certain industry stakeholder organizations because of the nature of their content; for example, those related to operating anomalies in ECDIS. Member States are increasingly seeking to obtain CLs via email rather than by post or fax. This is welcomed by the IHB since it reduces the administrative burden and the cost of postage for the IHB.

### **Task 1.2.7 IHB Technical Library**

The IHB technical library comprises bound manuscript copies of all significant IHO records, such as Conference Proceedings and Circular Letters, together with a comprehensive collection of reference books on various topics related to hydrography and nautical charting.

New books are added to the collection from time to time. In addition, and in accordance with the requirements of Article 19 of the General Regulations, the IHB maintains a collection of paper charts that it uses for internal reference purposes. The collection comprises all INT charts plus the complete Admiralty Chart series. This collection of charts is supplemented by the latest edition of various nautical publications supplied by Member States. Meanwhile, the IHB has been unable to establish a coherent collection of ENC's similar to the paper chart collection. Many of the Member States that produce ENC's have not granted the necessary access authority to the IHB.

## **Element 1.3 Public Relations**

This element covers activities concerned with raising the profile of hydrography and of the work of the IHO.

### **Task 1.3.1 Relationship with the Government of Monaco and other Diplomatic Missions**

- **Government of Monaco** The relationship with the Government of Monaco remained excellent throughout the year. The Directing Committee and officers from the Department of External Relations met from time to time during the year to discuss progress on all matters of mutual interest. Members of the Directing Committee also met various diplomatic and government officers at functions and events hosted in Monaco by the Government or diplomatic missions in the Principality.
- **Presentation to EFTA study group.** At the invitation of the Government of Monaco, Director Bessero presented the IHO to a delegation of diplomats and senior government officials of the European Free Trade Association Group (EFTA) who visited Monaco in June. The presentation was a good opportunity to mention that three Coastal State members of the European Union (Bulgaria, Lithuania and Malta) are not yet members of the IHO.
- **Other Diplomatic Missions**
- **Liaison with Jamaica, Philippines, Thailand.** While attending the IMO World Maritime Day celebrations in London in September the President called on the Heads of Legation at the High Commission of Jamaica, and the Embassies of The Philippines and Thailand to provide briefings on the work of the IHO and to encourage progress on the approval of the Protocol of Amendments to the IHO Convention and on approving the membership of those States seeking to join the Organization.

### **Task 1.3.2 Compile and Publish IHR**

The IHR is the principal peer-reviewed journal that records significant developments in hydrography and associated subjects. Two editions of the Review were published in 2013. Obtaining suitable papers continued to be a struggle for the Editor. As in previous years, the input via the points of contact of RHCs continued to be low.

Member States and others working in the fields of hydrography are encouraged to submit papers to inform their peers and to provide a lasting record and reference for the future.

### **Task 1.3.3 World Hydrography Day**

The theme for the 2013 celebration of World Hydrography Day was “*Hydrography - supporting the blue economy*” - highlighting the significant economic value of hydrography to all human activities that take place in, on or under the sea.



The celebration in Monaco in June received a significant boost from the Italian Navy who's surveying vessel Galatea was berthed in Monaco's main harbour and was open to visitors. The Hydrographer of Italy, Rear Admiral Andrea Liaci also attended the celebrations.

An evening reception was held on the IHO's rooftop terrace where guests from the government, local dignitaries, maritime industry, and current and retired IHO staff celebrated World Hydrography Day. The Prince of Monaco was represented by HE Jacques Boisson, Secretary of State. In addition, the IHO was hosting a meeting of the Working Group on the Safety of Navigation in the Black and Azov Seas which enabled the Hydrographers of Georgia, Russian Federation, Turkey and Ukraine to be present.

The President delivered a speech that addressed the theme of the celebration. This was followed by Mr Stephen Wilkins handing over data from a recent survey conducted in the Antarctic Peninsula from his exploration yacht *Xplore*. This survey was passed to the hydrographic offices that are producing charts of the Antarctic Peninsula.



*President Ward addresses guests at WHD*

The Monaco Press Club and the Directing Committee held a breakfast debate at the IHB premises as a pre-cursor event to the celebration of World Hydrography Day. This event brought together about twenty press and non-press representatives, amongst whom were Mr Henri Fissore, Ambassador attached to the Minister of State of the Monaco Government, Mr Jean-Louis Grinda, President of the Commission on the Environment and Lifestyle of the National Council of Monaco and Mr Jean-Pierre Margossian, President of the Monaco Press Club.

### **Task 1.3.4 Public Relations and Representational Activities**

The IHB provided regular articles for inclusion in a dedicated page in the Hydro International magazine. Each article covered topical subjects of interest to the readership including the work of the HSSC, the MSDIWG, World Hydrography Day, and the SCUFN. A number of the topics included in IHO Circular Letters were publicized as news items by Hydro International and other technical magazines and journals.

In addition to participation in events described elsewhere in this report, the IHB represented the IHO at a number of other events in 2013. In each case, the IHO representatives sought to highlight relevant aspects of the work of the IHO and its Member States.

- **Monacology 2013.** Monacology is an Awareness Week programme designed to raise Monegasque children's awareness of the environment and sustainable development. Monacology 2013 was held on the harbour side in front of the IHB in June.

The IHB participated in Monacology for the first time with a stand and interactive displays which were one of the attractions of the event. More than 350 pupils from local schools in Monaco and neighbouring France visited the IHO stand. Each visitor was able to draw their own chart of the Mediterranean Sea using tracing paper and to try and reassemble a magnetic puzzle chart. Each participant was rewarded with an IHO badge designating them as a *Junior Hydrographer*.

The IHO was honoured to receive a visit from HSH Prince Albert II to its exhibition stand during the inauguration of the Monacology Week.



*The Monacology Event was inaugurated by H.S.H. Prince Albert II of Monaco*

- **Cyprus - visit to Department of Lands and Surveys.** Director Bessero took advantage of his participation in the CIRM Conference (see Task 1.1.2) in Cyprus to visit the Department of Land and Surveys which is the national organization responsible for hydrographic services, based in Nicosia.

- **UK Catapult Programme.** At the invitation of the organizers, the President represented the IHO at a workshop convened by the UK Satellite Applications Catapult programme to discuss the technical issues relating to the assessment of satellite derived bathymetric data and the current standards applicable to hydrographic data. The Satellite Applications Catapult is one of seven elite, not for profit technology centres representing a £1Bn public and private sector investment programme in the UK over the next five years. It seeks to stimulate the innovative potential of the industrial and academic communities to reach commercial reality.
- **ESRI User Conference.** The President visited the ESRI Users Conference in San Diego in July. This annual conference is arranged by the geospatial information systems (GIS) company ESRI to provide an opportunity for GIS users to learn about new and emerging trends and developments in GIS.



*President Ward discusses the global state of hydrography with Mark Cygan, President of the International Map Industry Association and Paul Holthus, President of the World Ocean Council*

The conference attracted over 13,000 attendees and covered oceans, ocean mapping and nautical cartography among its many themes. Representatives from a number of Member State hydrographic offices were present. In addition to a group discussion on the development of GIS analysis tools to support the IHO Capacity Building Programme by identifying priority areas for surveying and chart improvement, the President facilitated a lively special interest group session on “*Taking Hydrography Beyond the Horizons of Navigation*”. This was attended by a broad spectrum of stakeholders.

- **Portugal - seminar highlighting the contribution of hydrography.** On completion of the 10<sup>th</sup> Conference of the Southern Africa and Islands Hydrographic Commission (SAIHC), the Portuguese Hydrographic Institute hosted a seminar highlighting the contribution of hydrography to the development and security of coastal States. The seminar also celebrated the 53<sup>rd</sup> anniversary of the establishment of the Portuguese Hydrographic Institute (IHPT).
- **World Maritime Day.** The President represented the IHO at a one-day symposium to coincide with the celebration of World Maritime Day at the IMO headquarters in London in September. The Symposium was arranged to provide Member States, industry and other stakeholders an opportunity to discuss and reflect on the theme for World Maritime Day: *Sustainable Development: IMO's contribution beyond Rio+20*. The seminar considered the Concept of a Sustainable Maritime Transportation System developed on

the initiative of its Secretary-General, Mr Koji Sekimizu. The IHB was a contributing partner in the development of the Concept.

The President was invited to speak at the seminar. He explained the underpinning role of hydrography and the mapping and charting of the seas as a fundamental enabler for all human endeavours - and marine transportation in particular. He highlighted the lack of adequate surveys in many parts of the world, as shown in IHO publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*. Many, if not most, of those attending the seminar were unaware of this fact.

The President encouraged all representatives to raise awareness and to support the efforts of the national representatives in IHO. He also outlined the potential opportunities to improve hydrographic knowledge in many areas through such things as *crowd-sourcing*, the use of professional mariners to submit passage sounding observations on a regular basis.



- **Professional Yachting Association.** The IHB provided the venue for the annual Professional Yachting Association (PYA) *Sea Changes* seminar held in September in conjunction with the Monaco Yacht Show. The Seminar was attended by a total of 100 delegates representing yacht crews, shore-based support companies, training organizations and administrative authorities.



The PYA is the industry body for professional yacht crews and was recognised as an NGIO Observer in the IHO in June (see CL 27 & 36/2013). The Seminar was divided into two sessions: a media briefing on GPS spoofing and eLoran followed by a session covering presentations on Maritime Administrations' policies towards the yachting industry.



Assistant Director Wyatt addressed the Seminar and provided a presentation on the IHO and its relevance to the yachting industry. He also provided details of trials and feasibility studies on Crowd-Sourced Bathymetry (CSB), which had been undertaken in collaboration with Captain Andrew Schofield, President of the PYA and Master of *MY White Rose of Drachs* throughout the summer season. Details of the next phase of the study were provided, where it is hoped to include more super-yachts. The study is the beginning of a project aimed at expanding the data portal and capacity of the IHO Data Centre for Digital Bathymetry (DCDB) to enable the upload, viewing and downloading of all its data including crowd-sourced data collected by all professionally manned vessels around the world.

- **Monaco Institute of Economic Law of the Sea (INDEMER).** Director Bessero and Assistant Director Wyatt represented the IHO at a Symposium: *International Law of the Sea versus European Union Law*, organized by the Monaco Institute of Economic Law of the Sea in October.



The event was hosted by the Oceanographic Museum of Monaco and attracted about sixty participants. The Symposium was opened by Mr José Badia, Minister of Foreign Affairs of Monaco, and the closing session was attended by HSH Prince Albert II.

The Symposium addressed a number of issues such as fisheries, maritime safety and security, piracy, protection of the marine environment, conservation and exploitation of the biodiversity, dispute settlement procedures and international jurisdictions.

- **European Community Action Scheme for the Mobility of University Students (ERASMUS Programme).** The Erasmus Programme is a European Union student and teacher exchange programme established in 1987. An Erasmus Intensive Programme is a short programme of study (two to six weeks of subject-related work) which brings together students and staff from higher education institutions in at least three participating countries.



The Erasmus Intensive Programme in Hydrography and Geomatics was initiated in 2012 by Nicolas Seube, Head of the Hydrographic Department at ENSTA Bretagne (France) and current Chair of the IBSC, in partnership with *HafenCity Universität, Hamburg* (Germany), and *Universitet Ghent* (Belgium). The Programme enables students to confront the realities of hydrographic surveying in a stimulating learning environment.

Divided into several project teams the students had to prepare, conduct and process a survey addressing a specific scientific or technical problem.

The 2013 programme was held on the Vassivière Lake, near Limoges in the centre of France, from 14 to 25 October. It brought together 52 students from the three partner institutions and also from the University of the West Indies (Trinidad and Tobago). It was supported by 13 industry sponsors.

Director Bessero was invited to provide a lecture on the IHO and its activities, with a focus on Capacity Building and Standards of Competence. He also had the opportunity for discussions with the students who presented their projects. The visit was combined with a presentation of the programme to the local media.

- **European Heritage Day.** As part of the celebration of European Heritage Day in Monaco on Sunday 22 September, when many of the public buildings are opened to the public, the IHB opened its doors and provided various displays and a tour of the premises to visitors.

## **Element 1.4 Work Programme and Budget, Strategic Plan and Performance Monitoring**

This element concerns the future structure and organization of the IHO and its capacity to meet future requirements.

### ***Task 1.4.1 IHO Strategic Plan and Performance Monitoring***

Work on implementing the new strategic planning process and performance monitoring is progressing. The IHO committees were invited to provide their inputs. In particular, the lack of input from the IRCC, based, in turn, on reports from Regional Hydrographic Commissions (RHC) impeded progress on compiling statistics for performance monitoring and delayed the production of the Annual report for 2012. The situation improved for 2013. But there were still some significant shortfalls in obtaining relevant information from many Member States through the RHC's.

Results for 2013 have been included in **Appendix IV** to this report.

### ***Task 1.4.2 IHO Work Programme and Budget***

The Work Programme for 2014, based on the approved 5-year Work Programme approved at the 18<sup>th</sup> International Hydrographic Conference in 2012, was drawn up and approved by Member States in December (see CL 61 & 74/2013). The work items contained in the 2013 Work Programme have been reported individually in this report.

The finances of the organization were managed in accordance with the approved budget and work plan for 2013. A budget surplus of 92k€ was declared at the end of the year. This represented a surplus of 3.2% of the approved budget. The full budget statement for 2013, recommendations and auditor's report are contained in part 2 of this report.

### ***Task 1.4.3 Conduct Biennial Stakeholders' Forums***

A Conference "*Digital Hydrography on the Maritime Web / Embracing the Challenges and Opportunities*", organized by the Hydrographic Society UK (THS UK) took place in Southampton at the end of October. The Conference was supported by the IHO and the International Federation of Hydrographic Societies (IFHS – see task 1.1.5) as a means of outreach and engagement with their common stakeholders.

The Conference was attended by 64 delegates from seven countries, with a widespread background from industry, academia, government and non-governmental organizations.

Three IHO Member States were represented - Germany, Netherlands, UK. Director Bessero and Assistant Director Costa Neves represented the IHB.

The Conference reviewed the steps being taken by hydrographic surveyors and the maritime community to support the move towards an e-Navigation digital information environment.

The first session gathered feedback from mariners highlighting the benefits and the complexity of dealing with multiple systems on the bridges of ships. Participants discussed the transition from paper to electronic charts and its benefits and disadvantages, and considered the increase in workload and various safety aspects of an increase in dependence on technology. It was noted that traditional mariners have much less empathy for Electronic Navigational Charts (ENCs) than for paper or raster charts.

The second session highlighted the problems related to some users relying on technology without fully understanding the limitations and the characteristics of the systems that they are operating. The subsequent forum discussion highlighted that the full use of ECDIS requires accurate and reliable data and noted a need to improve digital hydrographic products with human-centred design tools to meet future requirements, including the use of 3D overlays. The need to anticipate future technological developments in training programmes was also mentioned.

The third session reviewed the requirements for hydrographic products and services in support of the Blue Economy in general and of government work in particular. It dealt with the benefits, limitations and future developments of satellite multispectral imagery along with the possibility of developing bathymetric applications based on other satellite techniques, such as synthetic aperture radar.

The fourth session focused on qualified training. The session began with a keynote address by the Chair of the IBSC reviewing the status and the evolution of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. Questions were raised during the forum on the merits of global or regional schemes for the recognition of individuals and the perspectives to set up a central register were discussed.

## Element 1.5 IHB

This element concerns ensuring that the IHB is able to provide the range of secretariat and other services required by Member States and relevant stakeholder organizations.

### **Task 1.5.1 IHB Administration**

**IHB Staff.** The Staff of the International Hydrographic Bureau (IHB) comprises 19 full-time positions. The Directors and four of the five Assistant Director positions are drawn from



international candidates. The remainder of the IHB positions are recruited locally. A list of the Directing Committee, staff and their responsibilities during the year are set out in **Appendix V and VI**. An organizational diagram is shown in **Appendix VII**.

The Government of Monaco awards the Service Medal annually as an important part of the celebration of the National Day of Monaco. Three members of the locally recruited IHB Staff were honoured: Mr Daniel Menini was awarded the Silver Medal in recognition of 30 years of service at the IHB and Ms Mary Paz Muro and Ms Isabelle Rossi were awarded the Bronze Medal for 20 years of service devoted to the IHB.

The medal ceremony was held at the Oceanographic Museum of Monaco and presided over by SEM Michel Roger, Minister of State of Monaco, assisted by Mr Stéphane Valeri, Government Minister for Social Affairs and Health, and attended by numerous other Monaco authorities.

In anticipation of the retirement of Assistant Director Michel Huet in June 2014 and in accordance with the Staff Regulations, the Directing Committee sought nominations for the position that will become vacant. Fifteen nominations of candidates with a diverse range of experience and qualifications were received. This provided the Directing Committee with a challenging task of selection. The Directing Committee selected Ingénieur en chef Yves Guillam from France. Mr Guillam is well known to many delegates, having had a long history of very active involvement in IHO and other international activities at the technical, operational and strategic levels. He will join the IHB Staff in May 2014 (see CL 50 & 71/2013).

**Secondment of Personnel to IHB.** Two officers were seconded to the IHB Staff during 2013 under the terms of IHO Resolution 54/2008. Mr Myung-Won Park from the Korea Hydrographic and Oceanographic Administration replaced Mr Baek-Soo Kim in January. Mr Satoshi Yamao from the Hydrographic and Oceanographic Department of the Japan Coast Guard continued to work at the IHB all year. Mr Park was employed on a number of tasks that included maintaining the GEBCO Gazetteer of Undersea Feature Names, processing and analysing incoming results from the IHO ECDIS anomalies check data survey, and assisting with the maintenance of various IHO publications. Mr Yamao continued his work on several geo-information databases, including an Antarctic database that will in future assist both the IHB and the RHCs in fulfilling their roles and a database that will simplify the production and maintenance of IHO Publication P-5 -*IHO Year Book* (see task 1.2.2).

**S-63 Scheme Administrator and S-63 Support.** The IHB continued to carry out the role of administrator of the IHO S-63 Data Protection Scheme. This involves processing applications and providing technical support and the individual and unique digital certificates and codes that are required to allow ENC data servers, ECDIS/ECS manufacturers (OEMs) and software developers to encrypt and de-encrypt ENCs as part of the services or equipment that they provide. Seven new Data Servers and 19 new OEMs were accepted in 2013. At the end of the year there were 42 data servers and 243 OEMs licenced to use S-63.

**Training.** Director Iptes undertook an introductory course in French and the Directors and Category A Staff participated in a course on “*Defining goals, Objectives and Key Performance Indicators*”.

#### **Task 1.5.2 IHB Translation Service**

The IHB translation staff were employed primarily on the translation of Circular Letters and IHB correspondence. The volume of this work was similar to previous years, however, the technical complexity of some of the translations rose significantly, which had the effect of increasing the translation work load. As a result, there was little opportunity to address the significant backlog of active IHO publications that await translation into the French and Spanish languages.

#### **Task 1.5.3 Commercial Support Contracts**

In addition to a part-time Capacity Building Assistant who was engaged under contract through a staffing agency for the last six months of the year, the IHB awarded contracts for assistance in the following areas:

- a review and comparison of the existing IHO Staff Regulations with reference to the corresponding conditions applicable in the UN and the Monaco Public Service, in support of the Work Programme of the Staff Regulations Working Group;

- S-100 Portrayal and S-101 Portrayal Catalogue Development, in support of the Work Programme of TSMAD and DIPWG;
- compilation of an S-100 GI Registry Programmer's Guide and commented code, in support of the Work Programme of TSMAD;
- production of a French version of IHO Publication S-65 - *ENCs - Production, Maintenance and Distribution Guidance*, in support of the Work Programme of TSMAD; and
- annual fees to the Editor of the International Hydrographic Review.

#### ***Task 1.5.4 IHB Staff Regulations.***

In order to progress the work of the IHO Staff Regulations Working Group (SRWG) established by Decision 18 of the XVII<sup>th</sup> IHC, a contractor was engaged towards the end of the year. The contractor, who was the Chief of the Conditions of Service Section at the United Nations, made a site visit to Monaco and conducted a comparative study between the existing conditions of service for staff at the IHB and the corresponding positions in the Monaco Public Service and the United Nations Organization. She provided her report towards the end of the year. Her report will be used by the SRWG to develop recommendations for consideration by 5<sup>th</sup> Extraordinary International Hydrographic Conference (EIHC-5) in 2014.

#### ***Task 1.5.5 Maintenance of IHB Premises***

#### ***Task 1.5.6 Maintenance of IHB Furniture and Fittings***

No significant maintenance or replacement to the premises, furniture or fittings was undertaken in 2013.

## **Element 1.6 International Hydrographic Conferences**

This element covers the organization, preparation and execution of International Hydrographic Conferences.

#### ***Task 1.6.1 5th Extraordinary International Hydrographic Conference***

EIHC-5 will take place in October 2014. Initial preparations began in the second half of the year and included organizing the arrangements in the conference venue and associated industry exhibition as well as the publication of several EIHC Circular Letters as part of the 12-month lead-up process.



# WORK PROGRAMME 2

## Hydrographic Services and Standards

### Introduction

The IHO Work Programme 2 “Hydrographic Services and Standards” seeks to develop, maintain and extend technical standards, specifications and guidelines to enable the provision of standardised products and services that meet the requirements of mariners and other users of hydrographic information. This Work Programme is under the principal responsibility of the Hydrographic Services and Standards Committee (HSSC).

### Element 2.1 Technical Programme Coordination

This element monitors technical developments and oversees the development of IHO technical standards, specifications and publications through the coordination and interaction of the relevant IHO working groups reporting to the HSSC. In 2013, over thirty Member States, two IHB Directors and all four Assistant Directors played an active role in this activity.

#### ***Task 2.1.1 Conduct annual meeting of HSSC***

The 5<sup>th</sup> meeting of the HSSC (HSSC-5) took place in Shanghai, China, hosted by the Maritime Safety Administration of China (China MSA), from 4 to 8 November 2013. 62 representatives from 25 Member States, PRIMAR Regional ENC Coordinating Centre, the IHB, and 6 international organizations accredited as observers were present. FIG (International Federation of Surveyors) was represented for the first time. The final minutes of HSSC-5, together with all documents referred to at the meeting, are available from the HSSC page of the IHO website ([www.iho.int](http://www.iho.int) > Committees & WG > HSSC), at section HSSC 5.

The HSSC reviewed the activities, proposals, and work plans of its working groups and the decisions of other bodies and organizations affecting its work, with particular attention being paid to critical areas. The different outcomes are summarized under the relevant tasks.

The Committee discussed the re-structuring of its working groups to acknowledge the changing focus from paper to digital data based products and services and to best use limited resources. The Committee agreed principles aimed at improving its efficiency and facilitating inputs from industry and other stakeholders through a reduction in the number of long-term working groups and the establishment of time-limited project teams. The proposed new structure will be further developed intersessionally and presented to the next HSSC meeting for implementation. Taking into account the central role that S-100 will play in future standards developments within the IHO as well as outside the IHO, the new structure will include a dedicated S-100 working group.



The HSSC reviewed its draft Work Plan for 2014-2015. Accordingly, a revised draft was prepared by the IHB in liaison with the Chairs of its Working Groups and submitted to HSSC members by correspondence for approval. The final version of the Work Plan was published on the HSSC page of the IHO website.

The HSSC decided to retain its current five Working-level Performance Indicators (WPIs) until sufficient historical data is available to assess their usefulness. Table 2 in **Appendix IV** summarizes the status of the WPIs as of 31<sup>st</sup> December 2013.

***Task 2.1.2 Provide technical advice and guidance on IHO technical standards, specification and publications***

The main activities under this task dealt with the promotion of S-100 - *IHO Universal Hydrographic Data Model*. They are reported under the tasks associated with the relevant forum. The IHB responded also to a number of routine enquiries on other IHO technical publications, in particular S-63 - *IHO Data Protection Scheme*.

## **Element 2.2 Hydrographic Data Transfer Standards**

This element addresses the developments related to transfer standards for digital hydrographic data, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2013, about twenty Member States and fifteen Expert Contributors participated in this activity.

***Task 2.2.1 Conduct meetings of relevant HSSC WGs dealing with hydrographic data transfer standards***

The Transfer Standard Maintenance and Application Development Working Group (TSMAD) met three times in 2013. The 25<sup>th</sup> meeting was hosted by the Japan Hydrographic and Oceanographic Department (JHOD) in Tokyo from 15 to 18 January. The 26<sup>th</sup> meeting was hosted by the Office of Coast Survey of the US National Oceanic and Atmospheric Administration (NOAA/OCS) in Silver Spring, Maryland, from 10 to 14 June, in conjunction with the 5<sup>th</sup> DIPWG meeting (see element 2.3). The 27<sup>th</sup> meeting was held at the IHB from 2 to 6 December.

The Surface Current Working Group (SCWG), established by the 4<sup>th</sup> meeting of the HSSC to develop standards for the delivery and presentation of navigationally significant surface



current information on an ENC in an ECDIS, held its first meeting at NOAA/OCS from 29 to 31 May. The SCWG drafted a work plan which was subsequently endorsed at HSSC-5. Mr Kurt Hess (USA) and Mr Louis Maltais (Canada) were confirmed as Chair and Vice-Chair respectively.

### ***Task 2.2.2 Maintain and extend the relevant IHO standards, specifications and publications***

Intense work continued on the development of S-100 and S-101 - *ENC Product Specification*. Two planning documents were elaborated to guide this development and set its timeline. A draft master plan was prepared in liaison with DIPWG to monitor the development and implementation of S-100. Its structure was endorsed by HSSC and the draft was posted on the IHO website for further inputs and comments. A more detailed roadmap was drafted to monitor the development and implementation of S-101. HSSC-5 endorsed the draft subject to a revision of the timelines and some additional comments. The draft S-101 product specification and its associated Data Capture and Encoding Guide (DCEG) is very close to completion, but more work on the supporting standard is needed to finalize the S-100 feature catalogue builder and portrayal catalogue builder (see task 2.3.2). Work on developing a test strategy for S-101 was undertaken and progressed, taking into account several test-bed projects presented by the Republic of Korea.

The revised editions 3.1.0 of S-57 - Appendix B1 - Annex A - *Use of the Object Catalogue for ENC (UOC)* and 1.1.0 of S-99 - *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry* endorsed by HSSC in 2012 were approved by Member States and posted on the publication section of the IHO website (CL 20/2013 refers).

A new version 4.0.0 of S-57 Appendix B.1, Annex A was prepared and endorsed by HSSC. This version includes new guidance on updating ENC datasets in response to disasters; on addressing depth discontinuities between surveys; and on masking certain objects in order to improve ECDIS screen display. It also includes ENC Encoding Bulletin No. 54 on virtual AIS Aids to Navigation. Version 4.0.0 is to be submitted to Member States for approval in 2014.

A new edition of S-58 - *ENC Validation Checks* and a draft Supplement No 3 to S-57 were also prepared by TSMAD aiming at introducing mandatory checks to be performed by ENC producers. These checks are based on a new concept of defining *critical errors* and *associated checks* which, if they are not satisfied, may cause a failure in an ECDIS, or at least severely compromise ECDIS performance. HSSC endorsed both documents, subject to a final review of the new draft edition 5.0.0 of S-58 by TSMAD. The revised versions are to be submitted to Member States for approval in 2014.

Work continued on preparing a new edition 3.0.0 of S-64 - *IHO Test Data Sets for ECDIS*. This new edition will include an explanatory test document with a comprehensive suite of test datasets. HSSC agreed to endorse it by correspondence after finalization by TSMAD.

HSSC considered the status of IHO Publication S-66 - *Facts about Electronic Charts and Carriage Requirements* and agreed to include the preparation of a new edition in the 2014-2015 HSSC work plan. The IHB was tasked to invite Member States to propose experts who could contribute to the task on a voluntary or contractual basis.

The 9<sup>th</sup> meeting of the Primar / IC-ENC Joint Technical Expert Working Group (JTEWG) took place at the UKHO in Taunton on 26 and 27 June. Several issues relating to ENC encoding practices, data consistency and data validation were considered. A proposal to develop a document similar to S-11 Part A - *Guidance for the Preparation and Maintenance of*

*International Chart Schemes*, providing guidance on the preparation and maintenance of ENC schemes was also discussed. Presentations were provided by industry representatives from CARIS, Jeppesen and 7Cs on their current ENC production and validation applications, and their preparations to support an S-101 ENC production environment.

### **Task 2.2.3 Develop and maintain S-100-based Product Specifications**

The SCWG considered initial concepts for product specifications for surface current information. The working group prepared a survey questionnaire to assess user requirements and potential product usage, as required by IHO Resolution 2/2007 - *Principles and Procedures for making changes to IHO Technical Standards and Specifications*. The questionnaire was made available from October to December (CL 56/2013 refers) and elicited 1 401 responses.

The HSSC adopted a standardised method for identifying S-100 based product specifications and endorsed the development of a new standard, IHO S-121 - *Maritime Limits and Boundaries Product Specification*, to be progressed by Australia's national geoscience agency, Geoscience Australia, on behalf of the IHO. The HSSC also supported the development of IHO S-124, a new Product Specification for Navigational Warnings, to be progressed by the IHO World Wide Navigational Warning Service Sub-Committee (WWNWS-SC) in liaison with TSMAD.

### **Task 2.2.4 Maintain and extend S-100 Registry**

The S-100 Geospatial Information Registry continued to be managed by the Chair of TSMAD on a part-time basis, through the generous and continuing support of UK. The Feature Concept Dictionary Register was expanded to include the domains requested by IALA and a revised Help file was implemented. A detailed technical documentation of the current version of the Registry and a report containing recommendations for correcting or improving the code were delivered using contract support assistance.

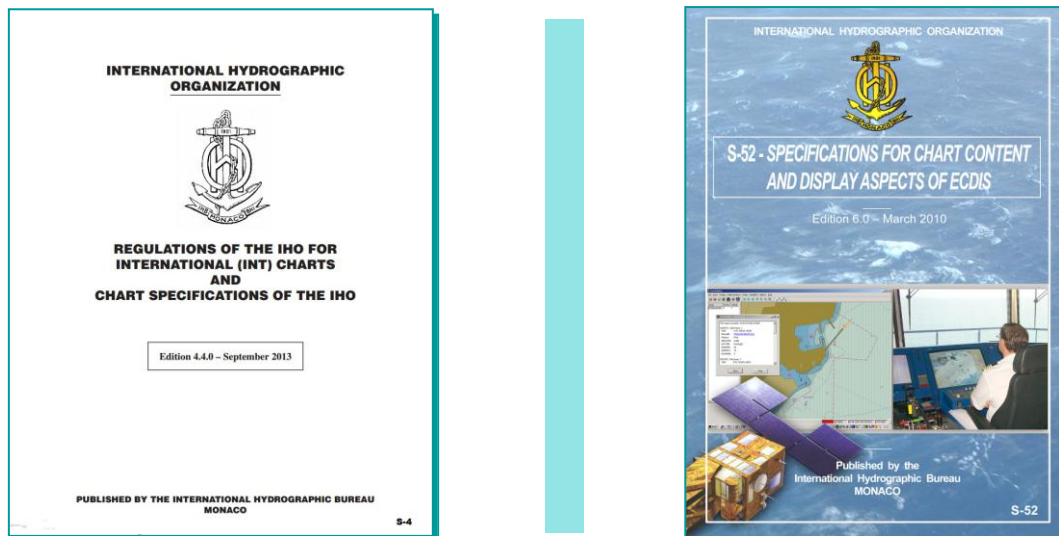
### **Task 2.2.5 Provide outreach and technical assistance regarding transfer standards**

A presentation entitled *IHO S-100, an essential contribution to e-Navigation and Maritime Spatial Planning* was made at the 3<sup>rd</sup> E-Navigation Underway Conference. The Conference was held from 29 to 31 January on board MS *Pearl Seaways*, during a voyage from Copenhagen, Denmark, to Oslo, Norway, and back to Copenhagen. Jointly organized by the Danish Maritime Authority and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the Conference was also supported by the Nautical Institute (UK), Comité International Radio-Maritime (CIRM), and the ACCSEAS Project, which is a three-year project supporting improved maritime access to the European North Sea Region. It was attended by 141 delegates representing national maritime administrations, hydrographic offices (Denmark and France), industry and international organizations (BIMCO, CIRM, IALA, ICS, IHO, IMO, IMPA).

As part of an industry process co-sponsored by the International Association of Oil & Gas Producers (OGP) and the global oil and gas industry association for environmental and social issues (IPIECA) aiming at producing a recommended practice for Geographic Information System (GIS) mapping, the Open Geospatial Consortium (OGC) issued a "Request for Information (RFI) on a Common Operating Picture (COP) for oil spill response". The IHB provided a response on behalf of the IHO encouraging the development of applications based on S-100 (see CL 52/2013). The OGC invited the organizations that had responded to the RFI to attend one or both of two one-day Stakeholder Workshops, held in the United Kingdom and in the USA respectively. The IHB participated in the first workshop

which took place on 19 December at ExxonMobil UK headquarters, in Leatherhead, near London. The workshop attracted about fifty participants, mainly from the industry (oil and gas companies, service providers, and consultants). The organizations present who had responded to the RFI were invited to present the highlights of their contributions. After recalling the lack of modern surveys in many parts of the world and describing the role and structure of the IHO, the IHB representative highlighted the contribution of national hydrographic offices in establishing the COP, the link with the IHO framework for response to marine disasters, the issue of land-sea integration in the context of spatial data infrastructures, and the relevance of standards developed by the IHO, notably S-100 and its associated product specifications.

## Element 2.3 Nautical Cartography



This element addresses the developments related to nautical cartography for paper nautical charts and the colours, symbols and display rules used to show SENC information on ECDIS, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2013, about thirty Member States and twenty Expert Contributors participated in this activity.

### **Task 2.3.1 Conduct meetings of relevant HSSC WGs dealing with nautical cartography**

The Chart Standardization and Paper Chart Working Group (CSPCWG) did not meet in 2013. The INT1 sub-working group responsible for INT1 - *Symbols, Abbreviations and Terms used on Charts* met in Cadiz, Spain, on 10 and 11 July, to progress a maintenance and standardisation review in preparation for revised editions of the relevant standards.

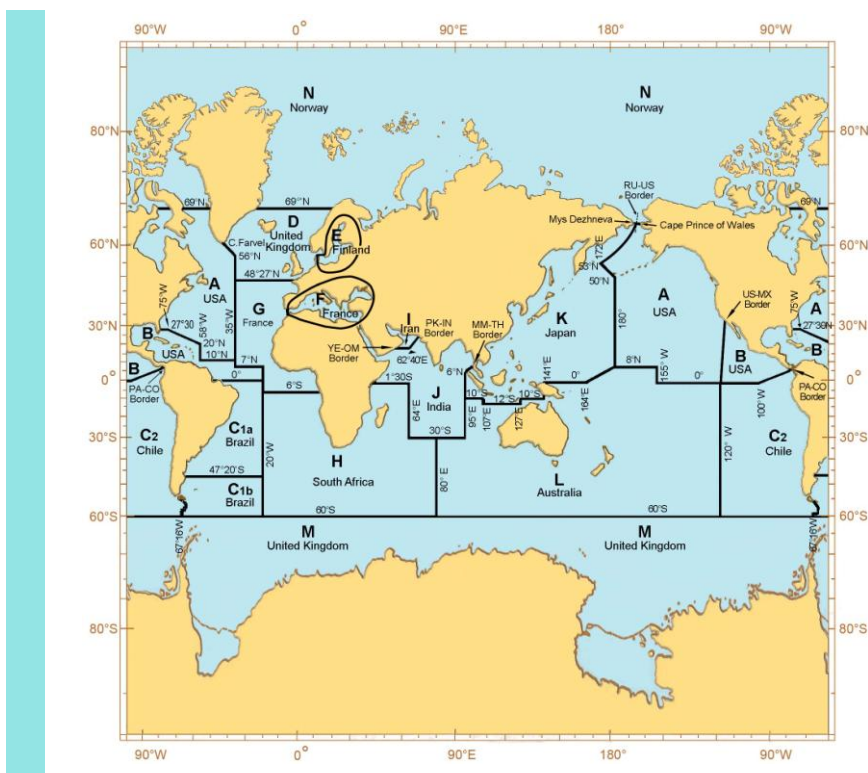
The 5<sup>th</sup> meeting of the Digital Information Portrayal Working Group (DIPWG) was hosted by NOAA/OCS in Silver Spring, Maryland, USA, from 10 to 14 June, in conjunction with the 26<sup>th</sup> TSMAD meeting (see element 2.2). Additionally, two workshops on developing the portrayal model for S-100 were held on 14 January in Tokyo, Japan, prior to the 25<sup>th</sup> TSMAD meeting, and from 5 to 7 March at the European headquarters of Jeppesen in Frankfurt, Germany.

### **Task 2.3.2 Maintain and extend the relevant IHO standards, specifications and publications**

The CSPCWG continued the revision and maintenance of IHO Publication S-4 - *Regulations for International (INT) Charts and Chart Specifications of the IHO*. A new revision of the English version, edition 4.4.0, was approved by Member States and published in September

2013 (CL 55/2013 refers). The main change was the revision of section B-300 - *Topography* (see CL 03 & 43/2013). The opportunity was also taken to include other new specifications approved by Member States, notably on 'After disaster' surveys (CL 02 & 42/2013), and on the portrayal of lights on multi-coloured charts (see CL 05 & 44/2013). Some additional clarifications and editorial amendments were included in parts A, B and C of S-4. The French version of the previous revision 4.3.0, prepared by France, was published in January (see CL 04/2013). The last and final section of Part B to undergo a complete review was section 500 - *Text: language, numbers, names, type styles*. The draft prepared by the CSPCWG was submitted to Member States for approval in December (see CL 73/2013). In addition, some new and revised specifications, related to sections B-100 - *General*, B-400 and C-400 - *Hydrography and Aids to Navigation*, were also proposed to Members States (see CL 58 and 70/2013).

The CSPCWG continued to prepare a draft revision of S-11 - Part A - *Guidance for the Preparation and Maintenance of International Chart Schemes*.



IHO International Charting Regions

Seven out of the existing 14 regional chapters of S-11 Part B *Catalogue of International (INT) Charts* were the subject of revisions by the IHB during the year, thanks to the collaboration of the relevant regional INT coordinators: Region B *Meso-America & Caribbean Sea*, Region C2 *SE Pacific*, Region D *NE Atlantic*, Region E *Baltic Sea*, Region I *NW Indian Ocean*, Region K *E Asia & NW Pacific*, and Region M *Southern Ocean*. In addition, a new chapter covering Region N *Arctic Ocean* was released in September, with Norway as coordinator.

The DIPWG continued to concentrate on developing a new version of the S-52 - Annex A - *Presentation Library* to ensure better consistency in ECDIS implementation. To reflect the extent of the changes being made, it was agreed that the new version would be a new edition rather than a revision. Familiarization copies of the draft new edition 4.0.0 of the Presentation Library, and of the associated draft revision 6.1.0 of S-52 - *Specifications for Chart Content and Display Aspects of ECDIS* were approved by the HSSC and posted on the IHO web site in December for final review by DIPWG and TSMAD members as well as by

original equipment manufacturers (OEMs). Following that review, final endorsement by HSSC will be sought by correspondence.

The DIPWG made significant progress in finalizing the portrayal model for S-100 and in developing a portrayal catalogue builder. Although the S-100 portrayal model is essentially complete, the narrative portrayal sections of S-100 & S-101 were still being developed at the end of the year. On the basis of a statement of requirements provided by the DIPWG and in accordance with the decision of the 4<sup>th</sup> HSSC meeting, a development contract was awarded to the geospatial software solutions company Caris in July 2013 to develop an S-100 portrayal catalogue builder. This effort will not only deliver a working web-based S-100 portrayal catalogue builder and the associated user documentation, but also a report on recommended changes, if any, to S-100 and S-101 that could improve the efficiency or effectiveness of portraying S-100 based product data. The deliverables were expected in early 2014.

## Element 2.4 Digital Data Protection and Authentication

This element addresses the developments related to data protection and data authentication, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2013, six Member States and twelve Expert Contributors participated in this activity.

### ***Task 2.4.1 Conduct meetings of relevant HSSC WGs dealing with data protection and authentication***

The 9<sup>th</sup> meeting of the Data Protection Scheme Working Group (DPSWG) took place at the IHB, Monaco, from 26 to 28 February. Mr Jonathan Pritchard (UK) was re-elected as Chair and Mr Robert Sandvik (Norway) was elected as Vice-Chair.

### ***Task 2.4.2 Maintain and extend the relevant IHO standards, specifications and publications***

The DPSWG made good progress towards drafting a new version of S-63 - *IHO Data Protection Scheme* for use with S-100 based product specifications including S-101. DPSWG proposed to TSMAD that data authentication mechanisms be embedded within S-100 and this proposal was accepted by TSMAD at its 26<sup>th</sup> meeting. Work continues in drafting the exact mechanisms to be implemented.

The IHB did not receive any adverse feedback following the announcement in December 2012 that the use of S-63 edition 1.0 should end on 31 December 2013. A limited extension was granted to two data servers who requested more time to complete the migration of a small proportion of legacy ECDIS systems to be able to use S-63 edition 1.1 ENC's.



## Element 2.5 Data Quality

This element addresses the developments related to methods of classifying and depicting the quality of hydrographic information, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2013, eighteen Member States and eight Expert Contributors participated in this activity.

### ***Task 2.5.1 Conduct meetings of relevant HSSC WGs dealing with data quality***

The 7<sup>th</sup> meeting of the Data Quality Working Group (DQWG) took place at the University of New Brunswick, Fredericton, Canada, from 16 to 18 July.

### ***Task 2.5.2 Maintain and extend the relevant IHO standards, specifications and publications***

The outcome of a study on the visualisation of data quality within ENC conducted by the University of Southern Mississippi (USM) in partnership with the DQWG was presented at the US Hydro 2013 Conference, organized by The Hydrographic Society of America in March and feedback was reported to DQWG at its 7<sup>th</sup> meeting. The DQWG set up a sub-group, led by Australia, to develop a hierarchy of data quality indicators and build an algorithm that will drive the data quality display. It was agreed to seek a greater degree of alignment between S-44 - *IHO Standards for Hydrographic Surveys* and zones of confidence and to base the visualization of data quality on four categories (good quality, moderate quality, poor quality, unknown). An information paper - *New ways of representing data quality for surface navigation* was presented at the 27<sup>th</sup> TSMAD meeting to elicit comments for review by the DQWG at its 8<sup>th</sup> meeting in 2014.

In addition to the work on the method of portraying quality indicators, the DQWG had been tasked by HSSC to seek ways to improve the education of the mariner on quality issues. To this end a number of initiatives have been started; notably, papers on data quality to be presented at various conferences as well as articles in relevant journals. The DQWG has also been tasked “to review, in liaison with training institutions, the adequacy of existing HO publications on the quality aspects of the practical use of ENCs”. In order to address this task, the DQWG initiated, through the IHB, the identification of all existing reference publications produced by Member States (see CL 51/2013). The intention being to compile an inventory that would reside on the IHO web site as a resource from which other Member States could derive input for their own publications. In this way, the data quality information presented by the various publications, web pages, pamphlets, etc. would be made more consistent. This, in turn, should assist and improve the levels of understanding by mariners of the implications of data quality on safe navigation.

HSSC-5 instructed the DQWG to include a new work item in its work plan to expand its consideration of data quality to include dynamic tides and water levels. The DQWG was also invited to consider using the Malacca and Singapore Straits Marine Electronic Highways (MEH) project as a test case.

## Element 2.6 Nautical Publications

This element addresses the developments related to the preparation of nautical publications, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2013, sixteen Member States and six Expert Contributors participated in this activity.

### ***Task 2.6.1 Conduct meetings of relevant HSSC WG dealing with nautical publications***

The 16<sup>th</sup> meeting of the Standardization of Nautical Publications Working Group (SNPWG) took place at NOAA/OCS in Silver Spring, Maryland, USA, from 3 to 7 June, immediately before the joint meeting of TSMAD and DIPWG.

### ***Task 2.6.2 Develop, maintain and extend S-10n – Nautical Information Product Specification***

Some progress was made with drafting an S-100 conformant product specification for marine protected areas (MPA). The intention is that an MPA product specification will offer two options: a stand-alone product and a product which overlays or interacts with an S-101 ENC. The completion of the “portrayal and data quality” components awaits key input from the DIPWG and the DQWG in order that further progress can be made.

The SNPWG developed a questionnaire to seek the views of experienced mariners on the usefulness of the various nautical publications and which would provide the greatest benefit if the information contained in them was available in an S-100 based ECDIS compatible format. The survey was undertaken between February and April and received 137 responses. Based on the outcome of the survey, the following order for the development of product specifications related to nautical information was agreed by the SNPWG and endorsed by the HSSC:

- S-122 - *Marine Protected Areas*
- S-123 - *Radio Services*
- S-125 - *Navigational Services*
- S-126 - *Physical Environment*
- S-127 - *Traffic Management*
- S-1xx - *Marine Services*
- S-1xx - *Digital Mariner’s Routeing Guide*
- S-1xx - *Harbour Infrastructure*

### ***Task 2.6.3 Maintain and extend the relevant IHO standards, specifications and publications***

The SNPWG continued its work on developing entries for the Nautical Publications Register (NPUBS) of the S-100 Registry. The working elements are stored in a web based SNPWG Wiki, which is now complete and comprises all information necessary for the definition of S-100 conformant product specifications related to nautical information. The relevant dictionary items will be proposed for inclusion in the S-100 N PUBS Register as soon as possible.

## **Element 2.7 Tides and Water Levels**

This element addresses developments related to tidal and water level observation, analysis and prediction and other related information including vertical and horizontal datums, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2013, twenty-five Member States and one Expert Contributor participated in this activity.

### **Task 2.7.1 Conduct meetings of relevant HSSC WGs dealing with tides and water levels**

The 5<sup>th</sup> meeting of the Tidal and Water Level Working Group (TWLWG) was hosted by the Finnish Transport Agency (FTA) in Helsinki, Finland, from 14 to 16 May. Ms Gwenaële Jan (France) and Mr Chris Jones (UK) were elected as Chair and Vice-Chair respectively.



### **Task 2.7.2 Maintain and extend the relevant IHO standards, specifications and publications**

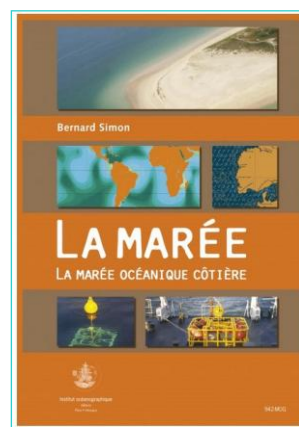
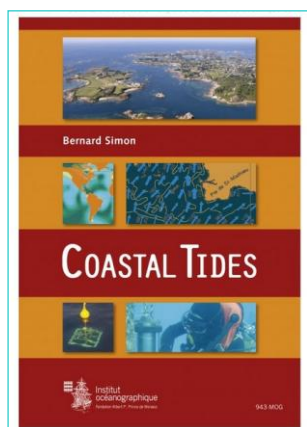
The TWLWG revised a number of IHO Resolutions on tides, water levels and tidal publications:

- Resolution 3/1919 as amended - *Datums and Bench Marks*
- Resolution 2/1977 as amended - *National Tidal Constituent Banks*
- Resolution 27/1919 as amended - *Time to be used*
- Resolution 1/1977 as amended - *Collection and Publication of Tidal Data*

The revisions proposed by the TWLWG were endorsed by the HSSC and the approval of Member States is to be sought in early 2014.

In relation to the maintenance of the standard list of tidal constituent, the TWLWG identified the need to adopt more accurate values for the angular speed of the constituents with a view to improving the precision of tidal predictions. The inventory of tide gauges used by Member States was updated in April 2013. This information is available on the TWLWG page of the IHO web site.

The English version of the Manual on Tides (Tides in Coastal Waters), co-produced in 2007 by the Institut Océanographique (Paris) and SHOM - the French Hydrographic Office, was made available by SHOM (see CL 63/2013). The Manual is now included in the IHO catalogue as publication C-33.





### **Task 2.7.3 Develop, maintain and extend a Product Specification for digital tide tables**

Little progress was reported on developing a product specification for digital tide tables. The members of the TWLWG were invited to review the paper: *Guiding Principles for Digital Tide Tables (DTT)* which had been submitted to the working group in 2010.

### **Task 2.7.4 Develop, maintain and extend a Product Specification for the transmission of real-time tidal data**

### **Task 2.7.5 Develop, maintain and extend a Product specification for dynamic tides in ECDIS**

The TWLWG developed a preliminary outline for a scoping document in order to identify the initial requirements and considerations. The HSSC tasked the TSMAD to assist the TWLWG in the development of a tidal product specification for a navigational surface and tidal data transfer standard that could be used to generate dynamic water levels and suitable navigational surfaces in ECDIS. The TWLWG was invited to take note of and liaise with the Malacca and Singapore Straits Marine Electronic Highways (MEH) project, regarding the relevance of the under keel clearance monitoring system being developed for the Straits.

## **Element 2.8 Digital Data Updating**

This element addresses the developments in standardized processes for the updating of digital hydrographic data products, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate.

### **Task 2.8.1 Maintain and extend the relevant IHO standards, specifications and publications**

The French version of edition 2.0.0 of IHO Publication S-65 - *Electronic Navigational Charts (ENCs) Production, Maintenance and Distribution* was published in January (see CL 04/2013).

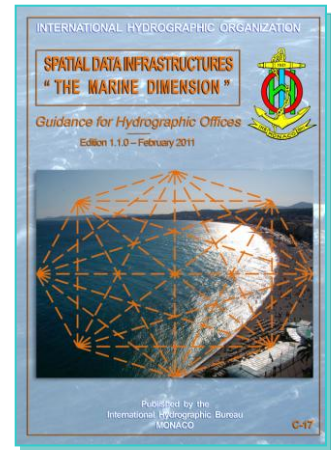
The HSSC reviewed the status of production and publication of Temporary (T) and Preliminary (P) ENC updates. 53 Member States are currently issuing ENCs either for themselves or on behalf of other States. There are 11 Member States known to produce (T) and (P) notices to mariners for paper charts that do not yet produce corresponding ENC updates. Five of these States have indicated that they expect to do so in the period 2013-2015. The Committee agreed that this situation leaves further room for progress and invited Member States that do not plan to align their ENC and paper chart T&P update regimes, as recommended by S-65, to reconsider their position (see CL 34/2013 and 08/2014).

## **Element 2.9 Marine Spatial Data Infrastructures**

This element addresses the developments related to the hydrographic component of Spatial Data Infrastructures (SDI), the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate. In 2013, twenty-five Member States and seven Expert Contributors participated in this activity.

### **Task 2.9.1 Conduct meetings of relevant HSSC WGs dealing with MSDI**

The 4<sup>th</sup> meeting of the Marine Spatial Data Infrastructure Working Group (MSDIWG) took place on 31 January and 1 February in Copenhagen, Denmark. This was the first MSDIWG meeting since 2009. It was preceded on 30 January by an MSDI Open Forum. Both events were hosted by the Danish Geodata Agency (GST). The aim of both events was to reactivate IHO activity in MSDI and to propose ways to improve the rate of implementation of MSDI by the Member States. The meeting reviewed the terms of reference and work plan of the working group, considered inputs from Member States and assessed the current status of individual countries' MSDI and SDI implementation. Mr Jens Peter Hartmann (Denmark) was elected to continue as Chair and Ms Ellen Vos (Netherlands) was elected as Vice-Chair.



### **Task 2.9.2 Maintain and extend the relevant IHO standards, specifications and publications**

This task was reflected in the work plan of the MSDIWG but no significant activity was undertaken in 2013. An additional task related to the development of training syllabi for MSDI and associated learning subjects was included in its work plan.

## **Element 2.10 Hydrographic Data Acquisition and Processing**

This element addresses the developments related to hydrographic data acquisition and processing, the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate.

### **Task 2.10.2 Maintain and extend, when required, the relevant IHO standards, specifications and publications**

The current edition of S-44 - *IHO Standards for Hydrographic Surveys* did not require any maintenance or extension in 2013.

## **Element 2.11 Hydrographic Dictionary**

This element addresses the development, maintenance and extension of IHO Publication S-32 - *Hydrographic Dictionary* in English, French and Spanish, and the provision of technical advice as appropriate. In 2013, eight Member States, and one Expert Contributor participated in this activity.

### **Task 2.11.1 Maintain and extend the IHO Hydrographic Dictionary in English, French and Spanish**

As an outcome of the 4<sup>th</sup> meeting of HSSC (see CL 102/2012), Member States were invited to review their participation in the Hydrographic Dictionary Working Group (HDWG), including nominations for office bearers, noting that the working group did not have a Vice-Chair and that the outgoing Chair would retire at the beginning of 2013. The request elicited some new members and confirmation of some existing members but the overall number of Member States represented (8) remained the same. The HDWG welcomed the participation of a trilingual Expert Contributor able to provide further guidance on GIS related issues. Mr Jean Laporte (France) was elected as the new Chair. The group did not meet in 2013 whilst correspondence participation remained at a worrying low level.

The HDWG continued the revision of a number of definitions. Five new definitions were agreed by the group and then endorsed by the HSSC. The approval of Member States is to be sought in early 2014.

### **Task 2.11.2 Develop the Spanish language Wiki version of S-32**

No specific activity related to this task was planned nor undertaken in 2013.

## **Element 2.12 ABLOS**

This element addresses the developments related to the hydrographic aspects of the UN Convention on the Law of the Sea (UNCLOS), the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate. The Advisory Board on the Law of the Sea (ABLOS) is a joint body of the IHO and the International Association of Geodesy (IAG). It comprises four representatives from IHO Member States and four representatives from the IAG. Five observers from IHO Member States and three Expert Contributors were also involved in the activities of the Board in 2013.

### **Task 2.12.1 Organize and prepare ABLOS annual business meeting**

The 20<sup>th</sup> business meeting of ABLOS was hosted by the Royal Navy of Oman and the Oman National Hydrographic Office, under the patronage of the Office of the Continental Shelf and Maritime Affairs at the Ministry of Foreign Affairs of Oman, and held in Muscat, Oman, on 28 and 29 October. It was followed by a seminar titled - *Harmonization with UNCLOS: Experiences and Observations* attended by approximately 90 delegates from Oman and other countries in the region, including Kuwait, Qatar, and Saudi Arabia.

### **Task 2.12.2 Organize and prepare the biennial ABLOS Conference**

To avoid interference with the 5<sup>th</sup> Extraordinary Hydrographic Conference in October 2014, it was agreed to postpone the 8<sup>th</sup> ABLOS Conference until 2015. Preparation has begun under the theme - *Law of the Sea and its vital role in the Blue Economy*.

### **Task 2.12.3 Contribute to the revision of IHO publication C-51 - TALOS Manual**

The final draft of the 5<sup>th</sup> edition of C-51 - *A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea – 1982* was completed by ABLOS and submitted to the HSSC for endorsement. The new draft includes a complete revision of Chapter 2 - *Geodesy*. In a significant departure from previous editions, selected illustrations throughout the Manual have been made into animations in order to better explain certain concepts and procedures. Following endorsement by the 5<sup>th</sup> meeting of the HSSC, the approval of Member States was sought in November (see CL 69/2013).



# WORK PROGRAMME 3

## Inter-Regional Coordination and Support

### Introduction

The IHO Work Programme 3 “Inter-Regional Coordination and Support” seeks to establish, coordinate and enhance cooperation in hydrographic activities on a regional basis, and between regions, especially on matters associated with the coordination of global surveying, nautical charting and ocean mapping, dissemination of maritime safety information, capacity building, and education and training. IHO Work Programme 3 is implemented under the principal responsibility of the Inter-Regional Coordination Committee (IRCC).

### Element 3.0 Inter-Regional Coordination Committee (IRCC)

The IRCC promotes and coordinates those activities that might benefit from a regional approach. The principal objective of the IRCC is to establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions; establish co-operation to enhance the delivery of capacity building programs; monitor the work of specified IHO Inter-Organizational Bodies engaged in activities that require inter-regional cooperation and coordination; promote co-operation between pertinent regional organizations; and review and implement the IHO Capacity Building Strategy, promoting Capacity Building initiatives.

#### ***Task 3.0.1 Conduct annual meeting of IRCC***

The 5<sup>th</sup> meeting of the Inter-Regional Coordination Committee (IRCC-5) was held in Wollongong, Australia on 3 and 4 June. The meeting was attended by the Chairs or representatives of the 15 Regional Hydrographic Commissions (RHCs), the IRCC subordinate bodies and 24 observers. A total of 43 participants from 22 countries attended. The IHB was represented by President Robert Ward, Director Mustafa Iptes and Assistant Director Alberto Costa Neves.

The Committee examined the achievements and the current challenges facing the RHCs and the subordinate bodies, the current status of hydrographic surveys and nautical charts worldwide, the progress of ENC schemes, the development of a risk-based hydrographic assessment methodology in the South-West Pacific, initiatives for collaboration, the progress of IHO Capacity Building, the establishment of a new INT Chart Region N covering the Arctic region, and the development of an IHO Antarctic region GIS and its planned extension to support IHO publications C-55, S-11 and P-5.

The IRCC approved new Terms of Reference for the World-Wide Electronic Navigational Chart Database Working Group (WENDWG) and endorsed revised WEND Guidelines for subsequent submission to Member States for approval. The Committee approved a work plan for the revision of the IHO Capacity Building Strategy that will be considered by the 5<sup>th</sup>

Extraordinary International Hydrographic Conference (EIHC-5) in 2014. A proposed definition of *Cartographic Boundary* intended to assist adjacent States in agreeing suitable limits for the production of adjoining ENC cells was endorsed by the Committee.

The importance of the IHO being able to provide an authoritative global ENC catalogue was acknowledged by the Committee. As a result, the Committee encouraged Member States to forward charts in accordance with Article 19 of the IHO General Regulations so that the catalogue and a reference collection of charts could be maintained at the IHB. The Committee endorsed revisions to IHO Publications B-6, S-5 and S-8 for the subsequent approval of Member States. The IRCC implemented a new internal document covering new procedures for the submission of reports and papers for IRCC meetings.

The use of Satellite Derived Bathymetry (SDB), Crowd-Sourced Bathymetry (CSB) and new data gathering technologies were extensively discussed. The Committee acknowledged that:

- a. SDB, with appropriate accuracy and reliability indicators, may be a way to address the current limitations on maritime development due to extensive areas of unsurveyed and very poorly surveyed shallow waters,
- b. SDB could be an effective way of identifying certain sea areas for further maritime development, including more detailed hydrographic surveys where the principal objective is for safe navigation,
- c. the cost effectiveness of SDB may encourage States to more quickly recognize the benefits of investing in an effective national hydrographic survey programme,

and encouraged the investigation on how CSB can be used in official navigational products.

IRCC elected Rear Admiral Tom Karsten (UK) as Vice Chair. Subsequently, Dr. Savithri Narayanan (Canada), the Chair of the IRCC, retired from her position as Dominion



*IRCC-5 delegates gather on the beach at Wollongong*

Hydrographer of Canada in November. As a result, Rear Admiral Karsten assumed the position of Chair. IRCC agreed to hold its next meeting in Paris, France, on 19 and 20 May 2014. The full report of the meeting was posted on the IRCC page of the IHO website.

### Element 3.1 Co-operation with Member States and attendance at relevant meetings

The objective of this element is to facilitate coordination, cooperation and collaboration among IHO Member States in order to improve the provision of hydrographic and charting services and products through the structure of the 15 RHCs and the IHO Hydrographic Commission on Antarctica.

This element of the Work Programme is largely accomplished through the meetings of the RHCs. The frequency of meetings of the RHCs varies from annually to triennially, depending on the region. RHC meetings continued to increase in importance as they exercised an increasingly active role in the overall planning, execution and assessment of the IHO Work Programme as it relates to their regions and to the development of the IHO Strategic Plan. A Director, sometimes accompanied by an Assistant Director, represented the IHB at the RHC meetings, providing guidance and assistance on IHO matters. The complete reports of almost all of the RHC meetings and the links to more detailed information are available on the IHO website.



*Director Iptes  
and H.E. Dr. Abdulla Belhaif Al Nuaimi,  
Minister of Transport of the UAE,  
accompanied by officials  
of the maritime sector*

IHB Director Iptes paid a high level visit to the United Arab Emirates (UAE) at the end of October to advise on and encourage the further development of hydrographic activities in the Emirates. The principal purpose of the visit to UAE was to assist in establishing a federal Hydrographic Service. Although the UAE has been a member of the IHO since 1992 and has good hydrographic capacity including survey vessels, modern equipment, staff and funding, there is, as yet, no formal Hydrographic Office structure and organization. Director Iptes called on the Minister of Transport and senior executives in the various maritime organizations in the UAE. He also visited Col Dr. Adel Khalifa al Shamsi, Head of Mapping and Surveying Services, who is the principal coordinator of hydrographic activities in the UAE.

#### **Task 3.1.1 Arctic Region Hydrographic Commission**

The IHO established a new INT Chart Region N covering the Arctic region. The meeting of the Arctic Region Hydrographic Commission (ARHC) initially planned in 2013 was postponed to early 2014.

#### **Task 3.1.2 Baltic Sea Hydrographic Commission**

The 18<sup>th</sup> meeting of the Baltic Sea Hydrographic Commission (BSHC-18) was held in Tallinn, Estonia, from 16 to 18 September, under the Chairmanship of Mr. Jukka Varonen (Finland). All full members of the Commission (Denmark, Estonia, Finland, Germany, Latvia, Poland,

Sweden and Russian Federation) attended the meeting. The United Kingdom was also represented as an Observer State. The IHB was represented by Director Mustafa Iptes.

The BSHC-18 meeting covered a wide range of regional topics including developments in each of the Member States, the latest status of hydrographic surveying and nautical charting including INT Charts, ENC production and BSHC cooperative projects.



The work of the BSHC Working Group for Monitoring the Implementation of the Harmonized Re-survey Scheme (MWG) and activities of the Chart Datum Working Group (CDWG) were reviewed. The Baltic Sea Depth Model was considered to be a good practical example of a fundamental component of a regional Marine Spatial Data Infrastructure. The meeting reviewed feedback from the last meeting of the Inter-Regional Coordination Committee (IRCC) and the World Wide ENC Database Working Group (WENDWG). Germany presented details of a new LIDAR test project and it was decided to organize a LIDAR seminar in Germany in 2014. The BSHC members also agreed to propose material for a special Baltic-themed edition of the International Hydrographic Review to be published in the autumn 2014.

At the end of the meeting, Mr. Taivo Kivimae (Estonia), was elected as the new Chair of the BSHC and Mr. Janis Krastins (Latvia), as the Vice Chair. It was agreed that the next meeting of the BSHC will take place in Latvia in June 2014.

### ***Task 3.1.3 East Asia Hydrographic Commission***

The 7<sup>th</sup> Coordination Meeting of the East Asia Hydrographic Commission was hosted by the Korea Hydrographic and Oceanographic Department (KHOA) from 23 to 24 January in Busan.

EAHC Coordination Meetings are held annually in the period between Conferences to progress initiatives and to coordinate activities between the States in the region. Attendees comprised the national Hydrographers of China, Indonesia, Japan, Malaysia, Philippines, Republic of Korea, Singapore and Thailand, assisted by senior members of their staff. The Democratic People's Republic of Korea was not represented at the meeting. A representative of Viet Nam attended. President Robert Ward represented the IHB as an observer.



The meeting was chaired by Commodore Romeo Ho, Hydrographer of The Philippines. The key focus was proposals to:

- a. establish an East Asia Regional ENC Coordinating Centre (RECC) to primarily harmonize ENCs within the region;
- b. establish an EAHC Training and Research and Development Centre to develop and coordinate capacity building capabilities and conduct Research and Development projects; and
- c. re-organize the structure of the EAHC to support the increase in activities and providing opportunity for the next generation of leadership within the region to head committee and working groups.



*President Ward  
and EAHC Chairman  
Commodore Romeo Ho*

The meeting also considered various subjects including developing clarification on the delimitation of cartographic boundaries for ENC production, the licensing, pricing and distribution of ENCs covering the South China Sea as well as small scale ENCs covering the whole region and a proposal for a Regional Marine Environmental ENC as a contribution towards protecting the marine environment. As a result of discussions in which all the delegates were actively involved, all proposals were accepted. This meant that from 2013, the EAHC began operating under a new and simplified internal organizational structure; the function of the Coordination Meetings will, in

future, be handled by an annual meeting of the EAHC Steering Committee. The RECC, the Charting and Hydrographic Committee and the Training and Research Development Committee will all report to the Steering Committee.

It was agreed that a meeting of the EAHC Steering Committee will take place in Malaysia in mid-February 2014.

#### ***Task 3.1.4 Eastern Atlantic Hydrographic Commission***

No meeting of the Eastern Atlantic Hydrographic Commission (EAHC) was conducted in 2013.

#### ***Task 3.1.5 Meso-American and Caribbean Hydrographic Commission***

The 14<sup>th</sup> Meeting of the Meso-American and Caribbean Sea Hydrographic Commission (MACHC) was held in St. Maarten (Netherlands) from 9 to 13 December with 60 participants from ten Member States (Brazil, Colombia, Cuba, France, Mexico, Netherlands, Suriname, Trinidad and Tobago, United Kingdom, United States), two Associate Members (Antigua and Barbuda, Barbados), one observer country (Costa Rica), seven observer organizations, and ten companies. President Robert Ward and Assistant Director Alberto Costa Neves represented the IHB.

The meeting was informed of significant progress on a proposal under the leadership of Antigua and Barbuda to develop sub-regional hydrographic services in the waters of the Member States of the Organization of Eastern Caribbean States (OECS). The project is a

direct result of the local and political interest and support generated from a Capacity Building training course (*Introduction to Hydrographic Surveying and Nautical Charting*) held in Antigua in 2011, with active participation of industry (CARIS, Fugro Pelagos, Kongsberg Maritime). Once donor funding has been obtained, the project will enable the development of a Regional Hydrographic Service in the Eastern Caribbean.



**Mr. Diógenes López Almeida (right) from Cuba provides the latest Cuban nautical chart and catalogue to Mr. John Nyberg (USA), Chair of the MACHC Integrated Chart Committee**

The meeting was briefed on the significant progress in ENC coverage in the region. Cuba has developed its own ENC production capacity and its first eight ENCs had been validated by the IC-ENC RENC and were being distributed worldwide. An additional four ENCs were in the process of validation. New INT Charts from Mexico were incorporated into the INT Chart Scheme on the Pacific side of the region. During the meeting Cuba presented its new national chart catalogue. This, and other collaborative activities, reflected the growing levels of technical cooperation between all the States of the MACHC.

Progress was made on resolving outstanding overlaps and gaps in ENC coverage. From an initial 26 overlaps in ENCs, 19 were resolved and work was underway to resolve the remaining seven. The Commission was informed of the development of the risk-based hydrographic assessment methodology being developed in the South-West Pacific to help identify and prioritize the need for surveys, based on a number of factors such as environmental sensitivity, traffic volume, priority ports and available survey quality.

President Robert Ward provided details of a pilot project to use the concept of crowd-sourcing to address the lack of hydrographic data in many regions, including the MACHC.

The pilot project, led by the IHO secretariat as a proof of concept study, will involve the collection of basic hydrographic data from a small number of vessels equipped with a simple, very low-cost data logger. The data will then be uploaded to the IHO Data Centre for Digital Bathymetry (DCDB) where it will be publicly available for subsequent viewing and use. Members and industry representatives also updated the Commission on a number of other developments in Crowd-Sourced Bathymetry (CSB) as well as Satellite Derived Bathymetry (SDB).

The Commission noted the progress made with its Maritime Economic Infrastructure Programme (MEIP), which aims to be part of a regional Marine Spatial Data Infrastructure

(MSDI) that supports the blue economy in the region. A Stakeholders' Seminar was held during the meeting. The participants learned of the contribution made by representatives of the commercial hydrographic sector in the region through its support to Capacity Building, and helping to optimize survey capacity by taking advantage of platforms that are deployed in neighbouring countries. During the seminar a proposal to create a Hydrographic Society in the region was agreed and plans were developed to progress this initiative further.

A number of changes to the Statutes of the MACHC were agreed so as to anticipate the entry into force of amendments to the IHO Convention, particularly the establishment of an IHO Council.

The next meeting of the MACHC will take place in the second week of December 2014 in Manzanillo, Mexico, immediately following after the second Mexican Hydrographic Conference.

### ***Task 3.1.6 Mediterranean and Black Seas Hydrographic Commission***



***The Participants at the 18<sup>th</sup> meeting of the Mediterranean and Black Seas Hydrographic Commission***

The 18<sup>th</sup> meeting of the Mediterranean and Black Seas Hydrographic Commission (MBSHC-18) was held in Istanbul, Turkey, from 25 to 27 September under the Chairmanship of Commodore George Matarangas (Greece). 46 representatives from Algeria, Croatia, Cyprus, France, Georgia, Greece, Israel, Italy, Lebanon, Libya, Malta, Montenegro, Morocco, Romania, Russian Federation, Slovenia, Spain, Tunisia, Turkey, Ukraine, and United Kingdom attended the meeting.

Representatives of the IOC, IC-ENC, PRIMAR, CARIS and Fugro Pelagos also attended as Observers. The IHB was represented by Director Mustafa Iptes and Assistant Director Alberto Costa Neves.

Director Iptes reported on the IHO Work Programme and the Organization's activities during the intersessional period. He reviewed the cooperation with other international organizations, and in particular with IMO, IOC and IALA, and the issues being progressed by subsidiary bodies of the Organization. The status of the adoption of the amendments to the IHO Convention and the way in which the approval procedure could be accelerated were also discussed. The preparations for EIHC-5 were discussed.

MBSHC-18 covered a wide range of regional topics including developments in each of the Member States, the latest status of hydrographic surveying and nautical charting including INT Charts and ENC production. In this context, the Region F International Charting Coordination Working Group (ICCWG) activities, status of the Region International Chart Catalogue and the promulgation of Maritime Safety Information (MSI) in NAVAREA III were all reviewed. The activities of the Working Group on the Safety of Navigation in the Black and

Azov Seas (BASWG) and developments concerning the establishment of a Caspian Sea Working Group in the future were discussed. The MBSHC members also reviewed feedback from the last meetings of the Capacity Building Sub Committee (CBSC), IRCC and the WENDWG. Rules for the designation of MBSHC representatives to the IHO Council that will be established under the amended Convention were also discussed and agreed by the MBSHC members. Lebanon and Libya noted their efforts to enhance their hydrographic capabilities through bilateral arrangements, and indicated that they would consider applying for membership of the Organization.

At the end of the meeting, Captain Erhan Gezgin (Turkey) was elected as the new Chair of the MBSHC. It was agreed that the next meeting of the MBSHC will take place in Georgia in June 2015.

### ***Task 3.1.7 Nordic Hydrographic Commission***

The 57<sup>th</sup> Meeting of the Nordic Hydrographic Commission (NHC) was chaired by Mr. Patrik Wiberg (Sweden) and hosted by the Hydrographic Office of Sweden from 15 to 17 April at the Training Centre of the Swedish Maritime Administration on the island of Arkö. Thirteen delegates attended the Conference and the five Nordic States (Denmark, Finland, Iceland, Norway and Sweden) were represented. The IHB was represented by Director Gilles Bessero.



The members reported on their national activities since the 56<sup>th</sup> Meeting. Then the Commission reviewed ongoing joint activities and projects of common interest related to validation of multi beam data, survey technologies and procedures - including outsourcing and crowd-sourcing - the future of national sailing directions, chart data exchange between the Nordic countries, the operation of PRIMAR, the development of official electronic chart services for pleasure craft and the development of Marine Spatial Data Infrastructures.

The Commission discussed its input to the WENDWG. It agreed to submit a proposal to IRCC aimed at further improving the IHO interface with the European Commission (EC) under the current IHO-EC Memorandum of Understanding.

The relevance of the Nordic Cooperation Agreement on Nautical Charting and Hydrographic Surveying which governs the activities of the Commission was discussed. The Commission decided to initiate a revision. In accordance with the current Agreement, Finland took over

the chairmanship at the end of the meeting. The next meeting would be hosted by Finland and was tentatively scheduled for August 2014.

### **Task 3.1.8 North Indian Ocean Hydrographic Commission**



The 13<sup>th</sup> meeting of the North Indian Ocean Hydrographic Commission (NIOHC) was held in Yangon, Myanmar, from 19 to 22 February. NIOHC Member States representing Bangladesh, India, Myanmar, Saudi Arabia, Sri Lanka, Thailand and the United Kingdom attended the meeting with Associate Members and Observers attending from Australia, France, Mauritius, Pakistan, Sudan, the State Hydrographic Research Institute of Russia and the Naval Meteorology and Oceanography

Command, USA. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHB.

The meeting received national reports from Members, Associate Members and the IHB as well as presentations from IALA and the IHO-IOC GEBCO programme. This was followed by reports on Worldwide ENC Database (WEND) issues, an update on the IHO Working Group on Marine Spatial Data Infrastructure (MSDIWG) and on India's inland waterways organization. Details of regional INT Chart and ENC coverage were discussed, highlighting areas which require further investigation to resolve outstanding issues. Considerable time was devoted to capacity building and regional requirements. A comprehensive plan was developed for submission to the CBSC later in the year.

Methods of engaging non-Member States were discussed. The IHB was requested to lead initiatives to conduct high level visits to The Maldives and Seychelles. NIOHC Members were requested to consider strategies for encouraging participation of all non-Member States.

The meeting concluded with a number of presentations from industry representatives. The presentations highlighted technologies and training opportunities available to the region. Industry representatives were keen to emphasize their willingness to engage with the NIOHC and its members to assist the development of hydrographic and cartographic capability within the region.

The Commission approved a revision to its Statutes so that the tenure of the Chair and Vice-Chair will be fixed as one year with the automatic succession of the Vice-Chair to the position of Chair. Pakistan applied for full membership of the NIOHC and was unanimously accepted. The Commission appointed UK as the next Vice-Chair of the Commission. As incoming Chair, Thailand volunteered to host the 14<sup>th</sup> meeting of the NIOHC which was scheduled to take place in February 2014.

### **Task 3.1.9 North Sea Hydrographic Commission**

No meeting of the North Sea Hydrographic Commission (NSHC) was conducted in 2013.

### **Task 3.1.10 ROPME Sea Area Hydrographic Commission**

The 5<sup>th</sup> meeting of the ROPME Sea Area Hydrographic Commission (RSAHC) was held in Riyadh, Saudi Arabia, from 4 to 6 March. RSAHC Member States representing the Islamic Republic of Iran, Oman, Pakistan, Qatar, Saudi Arabia and the United Arab Emirates (UAE) attended the meeting together with Associate Members France and the United Kingdom, and Observer Organizations IALA and the IHO-IOC GEBCO programme, together with various representatives from industry. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHB.

The meeting received National Reports from Members, Associate Members and the IHB followed by reports on IHO-IOC GEBCO and WEND issues. RSAHC Members were requested to consider strategies for encouraging the active participation of all Member and non-Member States. Details of regional INT Chart and ENC coverage were discussed, highlighting areas which require further investigation to resolve pending issues. A Working Group was created to take forward this work.



*Director Iptes addresses delegates at the Opening Ceremony*



*RSAHC-5 in session*

The NAVAREA IX Coordinator provided an update on activities in the region, which also includes the Red Sea. A brief was given, followed by a discussion on regional infrastructures for tsunami and other disaster warning systems.

The meeting included a large number of presentations from industry representatives. The presentations highlighted technologies and training opportunities available to the region. Industry representatives were keen to emphasize their willingness to engage with the RSAHC and its Members to assist the development of the hydrographic and cartographic capability in the region. A presentation was given by IALA which was followed by presentations from the regional Capacity Building (CB) Coordinator. The presentations generated considerable debate on CB issues and regional requirements. A comprehensive plan was developed for submission to the CBSC that was to meet later in the year.

IALA and the Arabian Maritime and Navigation Aids Services (AMNAS) applied for formal Observer status. Both were unanimously accepted. UAE and the Islamic Republic of Iran were elected as the next Chair and Vice-Chair of the Commission.

### **Task 3.1.11 Southern African and Islands Hydrographic Commission**

The Portuguese Hydrographic Institute (IHPT) hosted the 10<sup>th</sup> Southern Africa and Islands Hydrographic Commission (SAIHC-10) Conference in Lisbon, Portugal, from 16 to 18 September. Representatives from Angola, France, Portugal, Malawi, Mauritius, Mozambique, Norway, South Africa and the United Kingdom attended the meeting. Industry representatives from CARIS, C-NAV, Fugro Pelagos, Jeppesen, Kongsberg, QPS, OceanWise and SevenCs also participated in the meeting and provided informative presentations on their products and services. The IHB was represented by President Robert Ward and Assistant Director Anthony Pharaoh.



The SAIHC International Charting Coordination meeting took place on 16 September. This provided an opportunity for members to review the current status of INT chart and ENC production in the region, to provide updated information (for inclusion in IHO publication S-11) and to discuss proposals for the adoption of new INT charts.

In addition to reports and discussions on national hydrographic activities, reports and presentations were also provided on Satellite Derived Bathymetry (SDB), procedures in response to marine disasters and Spatial Data Infrastructures (SDI). Issues relating to the SAIHC activities affecting the IHO Work Programme and the capacity building programme were also discussed.

Captain Abri Kampfner (South Africa) and Mr. Abdool Nooraneer Oozeer (Mauritius) were re-elected to serve as Chair and Vice Chair of the SAIHC for the forthcoming period until the next conference. The next conference will take place in Maputo, Mozambique from 11 to 13 August 2014.

### **Task 3.1.12 South East Pacific Regional Hydrographic Commission**



The 11<sup>th</sup> Conference of the South-East Pacific Regional Hydrographic Commission (SEPRHC) was hosted and chaired by the Hydrographic Office of Peru (Dirección de Hidrografía y Navegación - DHN) on 17-18 June in Lima. Twelve delegates attended the Conference, including nine representatives from three of the four IHO Member States of the Region (Chile, Ecuador and Peru) and two observers from industry. The IHB was represented by Director

Gilles Bessero who provided a briefing on current IHO issues and the work of the IHB.

The States present reported on their national activities since the 10<sup>th</sup> Conference. Colombia presented its report by video conference. Then the coordinators of the HSSC, IRCC, CBSC and WENDWG groups reported on their work and the Commission discussed their future activities in connexion with the IHO Work Programme. The Capacity Building activities for 2013-2017 were reviewed and agreed. The two representatives from industry presented their firms and outlined the support that they could provide to the Commission and to its Member States.

The Commission decided that the next Conference will take place from 1 to 3 June 2015 in Guayaquil; Ecuador.

### **Task 3.1.13 South West Atlantic Hydrographic Commission**

The 7<sup>th</sup> Conference of the South West Atlantic Hydrographic Commission (SWAtHC) was hosted and chaired by the Hydrographic Office of Argentina (*Servicio de Hidrografía Naval - SHN*) from 18 to 19 March in Buenos Aires, Argentina. Ten delegates attended the Conference representing the three IHO Member States (Argentina, Brazil and Uruguay) and Associate Member (Paraguay). The IHB was represented by Director Gilles Bessero. Bolivia was unable to attend.



The States represented at the meeting reported on their national activities since the 6<sup>th</sup> Conference. Brazil also reported on the work of IRCC, CBSC, WENDWG and HSSC. The Conference updated the membership of the SWAtHC Planning Committee (*Comité de Planeamiento*) and tasked this Committee with progressing ongoing or new actions related to the maintenance of the INT and ENC schemes, the exchange of experience on producing inland ENCs, the harmonization of Sailing Directions, and the implementation of S-100 based product specifications. The Commission agreed on its Capacity Building request for submission to the next CBSC meeting; that included a technical visit and a high level visit to Paraguay. It was agreed that the next Conference will take place in March 2014 in Brazil.



### **Task 3.1.14 South West Pacific Hydrographic Commission**



The Government of Vanuatu hosted the 12<sup>th</sup> Conference of the South West Pacific Hydrographic Commission (SWPHC) from 12 to 14 November. Representatives from six of the eight Member States of the Commission (Australia, Fiji, France, New Zealand, Papua New Guinea, Tonga, United Kingdom, United States), and three out of nine Associate Members (Kiribati, Solomon Islands, Vanuatu) attended the meeting. Four international organizations and nine representatives from

industry also participated. The IHB was represented by President Robert Ward. The meeting was opened by the Acting Prime Minister of Vanuatu, the Honourable Ralph Regenvanu, and chaired by Rear Admiral Tom Karsten (UK).

A recurring theme throughout the meeting was the relevance of the “*Blue Economy*” and in particular the significant dependence that the Pacific Islands States have on sea transportation and cruise ship tourism. In this regard, the poor state of surveying and charting continues to be of major concern.

The Hydrographer of New Zealand described the recent development and implementation of a risk-based method of analysis that identifies areas of critical charting concern. An analysis had been undertaken of Vanuatu waters and another is underway for the Cook Islands. New Zealand, under the sponsorship of the NZ Aid programme, will follow this with an analysis of the waters of Tonga. The Commission agreed that New Zealand’s risk-based analysis method should be adopted for use across the whole area of the Commission, and may also be useful in other Regional Hydrographic Commissions.

The activities of the Applied Geoscience Division (SOPAC) of the Secretariat of the Pacific Community (SPC) and its improved capability to conduct hydrographic surveys that can be used to improve charts were presented and discussed. The aim is to further develop and use the SOPAC hydrographic capability as a regional resource - especially in those countries that have little or no in-country capability.

At the end of the meeting, the members agreed that Australia would assume the Chair from February 2014 and Papua New Guinea would continue to occupy the Vice Chair position. Subject to final confirmation, the next meeting will be held in the Cook Islands in February 2015.

### **Task 3.1.15 USA-Canada Hydrographic Commission**

The 36<sup>th</sup> meeting of the USA-Canada Hydrographic Commission (USCHC) was held on 29 April, via internet teleconference. The meeting was co-chaired by Rear Admiral Gerd Glang, Hydrographer of the USA, and Dr. Savithri Narayanan, Dominion Hydrographer of Canada. Director Mustafa Iptes presented a report on the IHB activities to the Commission.

The USA and Canada presented their national reports. The Commission reviewed the work of its Chart Advisory Committee and reports on IRCC and HSSC matters and other regional issues including the Arctic region. The Commission also discussed the Potential Vertical Datum Collaboration and e-navigation. At the end of meeting, the Commission agreed that the next meeting will be held in Canada in April 2014 in conjunction with the Canadian Hydrographic Conference.

### **Task 3.1.16 IHO Hydrographic Commission on Antarctica**

The *Instituto Hidrográfico de la Marina* (IHM) in Spain hosted the 12<sup>th</sup> Meeting of the IHO Hydrographic Commission on Antarctica (HCA) in San Fernando, near Cadiz, from 3 to 5 December. HCA comprises 23 Member States that are also signatory nations to the Antarctic Treaty. The HCA seeks to improve the quality, coverage and availability of nautical charting and other hydrographic information and services covering the Antarctic region. The meeting was chaired by IHO President Robert Ward. IHB Assistant Director Michel Huet attended as HCA Secretary.

President Robert Ward and Captain José Ramón Fernández de Mesa y Tembours, Director of IHM, welcomed the participants representing fifteen IHO Member States (Argentina, Australia, Brazil, Chile, Colombia (as observer), France, Germany, New Zealand, Norway, Peru, Republic of Korea, South Africa, Spain, United Kingdom and United States), three observer organizations (the Council of Managers of National Antarctic Programs (COMNAP), the International Association of Antarctic Tour Operators (IAATO) and IALA), two international projects (the IHO-IOCGEBCO programme and the International Bathymetric Chart of the Southern Ocean (IBCSO)), one observer from the IHO MSDIWG and three Expert Contributors from CARIS, Fugro Pelagos and Kongsberg Maritime.



The Commission reviewed progress since the previous meeting and received reports from COMNAP, IAATO, IALA, GEBCO and IBCSO, as well as from the IHO Member States in the Commission. Presentations were also given by the Expert Contributors and the observer from the MSDIWG. Each focused their presentations on the Antarctic environment.

Discussion at the meeting centred on the need to obtain more bathymetric data in the region, through collecting new data and identifying existing data, noting that the waters surrounding Antarctica are over 95% unsurveyed. To this end, better coordination of surveys is required as well as the introduction of programmes using *ships of opportunity*. A document entitled "*IHO guidelines for the collection and rendering of hydrographic data by Ships of Opportunity*"

*operating in the Antarctic Region*”, developed by a sub-group led by New Zealand, was adopted by the Commission. President Robert Ward introduced details of a pilot project to use the concept of crowd-sourcing to address the lack of hydrographic data in all regions of the world, including Antarctica. The pilot project, led by the IHO Secretariat as a proof of concept study, will involve the collection of basic hydrographic data from a small number of vessels equipped with a simple, very low-cost data logger (costing about USD200). The data will then be uploaded into the IHO Data Centre for Digital Bathymetry (DCDB) where it will be made publicly available for subsequent viewing and use.

A concept proposal described by the Expert Contributor from Fugro Pelagos to undertake LIDAR bathymetric surveys in selected areas of the Antarctic Peninsula, using a combination of government and commercial resources was favourably received by the meeting. In this context, the Commission adopted the following declaration:

“In considering how to achieve its agreed survey and charting priorities for the Antarctic region, HCA encourages multi-party multi-disciplinary collaborative projects that involve government, IGO’s, NGO’s, industry and donor organizations. Such projects should, wherever possible:

- *maximise the benefits for all parties*
- *minimise costs by harnessing existing infrastructure*
- *incorporate multi-parameter data collection programmes from the same platform.*

*In this context, the outline proposal paper (HCA13-07.2A) presented at HCA-13 is an example that might fulfil such requirements.”*

The usefulness of maintaining a liaison with the Antarctic Treaty Consultative Meeting (ATCM), through the provision of IHO reports, and participation in ATCM meetings, was discussed. President Robert Ward noted the lack of concrete results regarding ATCM actions and decisions to support hydrographic activities in Antarctica. However, the meeting agreed that continuing a campaign to raise awareness at the ATCM was important and that the engagement of national Hydrographers with their respective national delegates to ATCM was essential.

A meeting of the HCA Hydrographic Priorities Working Group (HPWG), in charge of coordinating hydrographic surveying and nautical charting (INT charts and ENCs), took place during HCA-13. As a consequence, revised schemes for ENCs were agreed. Also, the inclusion of six new INT charts in the scheme in the Antarctic Peninsula and in the area of the Larsemann Hills was agreed. As of December 2013, 71 INT charts had been published, out of 111 charts in the scheme, and 87 ENCs out of the some 150 ENCs that are planned.

### **Task 3.1.17 WEND Working Group**

The 3<sup>rd</sup> meeting of the Worldwide ENC Database (WEND) Working Group was held at the IHB in Monaco, on 13 and 14 May, under the Chairmanship of Captain Jamie McMichael-Phillips (UK). Twenty-four representatives from eight Regional Hydrographic Commissions (BSHC, EAHC, EAthC, MBSHC, NHC, NSHC, SWAtHC and USCHC), seven Member States, and the Regional ENC coordinating Centres (IC-ENC, PRIMAR) attended the meeting. The IHB was represented by President Robert Ward, Director Mustafa Iptes, Director Gilles Bessero and Assistant Director Alberto Costa Neves (WENDWG Secretary).



The meeting approved revised guidelines for the implementation of the WEND Principles and endorsed a proposal to establish a definition for cartographic boundary to help the production of ENC's in areas with conflicting territorial claims. The meeting analysed the potential impact of ENC issues (gaps, overlaps and poor quality source data) and considered the development of a risk assessment tool and guidelines for assessing the risks associated with overlapping ENC's.

The Working Group decided to make evaluation criteria available to assist RHCs and Member States in identifying and resolving significant differences between paper charts and ENC's. It also considered the development of a policy to address the withdrawal of ENC's after they are issued. The meeting further discussed the importance of having an authoritative ENC metadata reference library in order to allow the IHO to properly assess and report to relevant stakeholders the status of ENC's. Arrangements for the development of the concept of an IHO RENC/WENC was also considered and agreed.

### ***Task 3.1.18 Industry participation in RHC meetings***

In addition to being represented at IHO meetings through various Non-Governmental International Organizations (NGIO) an increasing number of representatives from industry participated in most RHC meetings as Expert Contributors, and through valuable contributions to regional capacity building initiatives.

### ***Task 3.1.19 Contribute to improving the framework of IHO response to marine disasters***

France presented a proposal to IRCC-5 to amend IHO Resolution 1/2005 in order to expand the scope from "Response to Disasters" to "Response to Marine Disasters, and Contribution to Prevention and Alert Systems". The main focus of the proposal was to cooperate, support and contribute data to the established IOC operational arrangements. The proposed amendments to the Resolution were endorsed by IRCC and will be submitted to the Member States for approval in 2014.

## **Element 3.2 Increase participation by non-Member States**

One of the important goals of the IHO is to increase the participation of non-Member States in IHO activities. IHB Directors visited and briefed high level governmental officials directly

and through their diplomatic representatives as part of the IHO awareness raising campaign. Non-Member States of the IHO were encouraged and invited to participate in the RHC meetings, Capacity Building initiatives and relevant IHO meetings.

**Malta.** While attending the IMO Council in London in July, President Robert Ward took the opportunity to call on the High Commissioner of Malta in London. The President discussed the role of the IHO and sought assistance in getting the government of Malta to consider becoming a Member State of the IHO.

Director Mustafa Iptes paid a follow-up high level official visit to Malta in early December to invite and encourage Malta to apply to become a Member State of the IHO. Director Iptes called on the Minister for Transport and Infrastructure, the Director General of the Continental Shelf Department of the Ministry and other senior officials.

Director Iptes also took the opportunity to meet Captain D. Bugeja, Chief Officer, Ports and Yachting Department, and Mr J. Bianco, Hydrographer of Malta, during his visit. In addition, Director Iptes paid a courtesy call on Mr Anthony Miceli DeMajo, Ambassador-designate of Malta to Monaco.

**Albania, Bulgaria, Montenegro.** Director Iptes undertook visits to Albania, Montenegro and Bulgaria in July. The purpose of the visits was to encourage Albania to apply for membership and to urge Montenegro and Bulgaria to complete the procedures to become Member States of the IHO. Montenegro subsequently submitted its Instrument of Accession and became the 82<sup>nd</sup> Member State of the IHO on 3 December.

**Panama.** The President took the opportunity of his visit to London in September to attend World Maritime Day celebrations to call on the Ambassador of Panama. The President discussed the role of the IHO and sought assistance in getting the government of Panama to consider becoming a Member State of the IHO.

**Maldives.** IHB Director Iptes paid a high level visit to the Republic of the Maldives at the end of October to advise on and encourage the further development of hydrographic activities and to encourage the application of the Maldives to become a Member State of the IHO. During his visit Director Iptes called on the Minister of Defence and a number of senior military officers responsible for various aspects of maritime activities in the Republic.

**Mauritania.** On the occasion of the IMO/IHO/IALA Regional Awareness Seminar on Safety of Navigation held in Nouakchott, Mauritania, (see Programme 1, task 1.1.20), Director Gilles Bessero took the opportunity to discuss the issue of the accession of Mauritania to the IHO Convention with the Minister of Fisheries and Maritime Economy. Mauritania was accepted to become a Member State in 1991 but has yet to submit its Instrument of Accession to the Convention on the IHO.

**Republic of Congo.** On the occasion of the sub-regional workshop on developing hydrographic services held in Pointe-Noire (see Programme 1, task 1.1.20) in November, the Minister from the Republic of the Congo in charge of Merchant Shipping announced that he had initiated the inter-ministerial process which should result in Congo applying to join the IHO.

#### **Status of Application for Membership of the IHO**

The following States, whose application for membership was approved in preceding years, have yet to deposit their Instruments of Accession:

- Mauritania (application approved in April 1991),

- Bulgaria (application approved in April 1992),
- Sierra Leone (application approved in September 2010),
- Haiti (application approved in November 2012).

At the end of the year three applications for membership were still awaiting approval by IHO Member States. The status of approvals at the end of 2013 was as follows:

Viet Nam	(applied 2011)	41 approvals out of a required 52;
Brunei Darussalam	(applied 2012)	36 approvals out of a required 52;
Georgia	(applied 2012)	38 approvals out of a required 52.

### Element 3.3 Capacity Building Management

The IHO Capacity Building programme is a strategic objective of the organization that provides targeted training, technical assistance and hydrographic awareness seminars aimed at improving nautical charting and the delivery of maritime safety information in regions, particularly for developing countries.

The IHO Capacity Building programme is funded from the IHO budget and is supplemented by additional support from Member States (currently Japan, through the Nippon Foundation, and the Republic of Korea). However, considering the growing demands for IHO Capacity Building activities, more funds and contributions are required. For this reason, the Directing Committee continued its campaign to find new donor States and funding organizations.

Due to the significant increase in the level of activity of the CB programme, the CBSC at its 11<sup>th</sup> meeting, approved the funding for the temporary employment under contract of a part-time Capacity Building Assistant (CBA) at the IHB. The CBA started to work at the IHB on 1 July.

The value of expenditure (393,933Euros) continues to grow year on year. Improvements in administrative procedures (see also Task 3.4.2) and the employment of the CBA in the second half of the year resulted in a better rate of execution of the planned programmes (83% completion rate). Nevertheless, some planned CB activities could not take place because of such things as administrative issues indicated by the RHCs and host nations, unavailability of the personnel, late changes of the planned events.

One IHB Director, one Assistant Director and the CBA were engaged in this work.

#### **Task 3.3.1 Capacity Building Sub-Committee**

The 11<sup>th</sup> meeting of the Capacity Building Sub-Committee was held in Wollongong, Australia from 30 May to 1 June. The meeting was attended by 11 members and 29 observers from 21 countries. The IHB was represented by President Robert Ward, Director Mustafa Iptes and Assistant Director Alberto Costa Neves (CBSC Secretary).

A revision of the IHO Capacity Building (CB) Strategy was one of the major topics on the agenda (see also Task 3.3.4). The CBSC had been tasked with this revision by the XVIII<sup>th</sup> International Hydrographic Conference. The results of the revision are to be reported to EIHC-5 in 2014. During the meeting the CBSC identified the main topics to be addressed and the timetable for the revision process. The main topics for consideration as part of the revision process will be: the possibility of funding equipment as part of capacity building; the establishment of guidelines on the level of capacity building available to non-Member States; the need for comprehensive projects and the use of consultants to assist with or deliver capacity building programmes; the use of C-55 as a country profile database; the limited use

of funds to support administrative processes; co-operation with stakeholders; the development of standard courses in MSDI; and the increasing requirement for hydrographic surveying courses at the IBSC Category B level.



*The Participants of the CBSC-11 Meeting*

The CBSC approved two new CB Procedures (Procedure 7 - application for courses, technical workshops, seminars and financial assistance, and Procedure 8 - project finance management) that entered into effect immediately. The CBSC also decided to establish “guidelines” in order to guide the work of the CB Coordinators in each Regional Hydrographic Commission.

The CBSC acknowledged the significant contribution of the IMO in supporting the development of hydrographic services in developing States through its Integrated Technical Co-operation Programme. The CBSC also acknowledged the support of Norway in the development of the CB Management System and the programme Performance Indicators (PIs). The preliminary figures for the Strategic Performance Indicators were discussed and reported to IRCC-5. (See **Appendix IV**)

The CBSC acknowledged the significant contributions made by the Republic of Korea and the Nippon Foundation of Japan to the IHO Capacity Building programme. The Sub-Committee also recognized a risk assessment process developed by New Zealand as a very useful tool for establishing priorities for surveys and charting in a region, as well as to guide CB activities and projects. CBSC also recognized the contribution of stakeholders from industry to the IHO Capacity Building programme and the need to develop further engagement with industry partners.

The CBSC discussed experiences and lessons learned from the execution of the 2012 and 2013 Capacity Building Work Programme (CBWP) and reviewed the activities associated with the 2013 IHO CBWP. This was used to adjust the future programme. The CBSC reviewed the proposals for CB projects submitted by the RHCs and drew up the 2014 IHO CBWP, listing the approved projects by order of priority so that additional projects can be undertaken if additional funds become available during the year.

### ***Task 3.3.2 Capacity Building Fund Management***

The Capacity Building Fund (CB Fund) is funded from IHO budget allocations; donations received in support of IHO Capacity Building initiatives and external contributions. The external contributions may be earmarked for specific capacity building initiatives. The

Republic of Korea made a significant contribution to the CB Fund during the period of this report.

Many other IHO Member States have contributed significant resources in kind to the CBWP, by providing the venue, instructors, local support, or other items to ensure the effective implementation of CB activities. A statement of accounts for the Capacity Building Fund is contained in Part 2 of this Annual Report.

**Task 3.3.3 Meeting with other organizations, funding agencies, private sector and academia**

The 7<sup>th</sup> Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG Capacity Building Coordination Meeting was held on 20-21 November at the IHB, in Monaco. The annual meeting brought together 11 representatives from IHO, IMO, IOC, IALA, IAEA and FIG. The WMO representative was not able to attend the meeting. The IHO was represented by Mr. Thomas Dehling (Germany), Chair of the CB Sub-Committee (CBSC). Director Mustafa Iptes and Assistant Director Alberto Costa Neves represented the IHB.

The meeting brought together the partner organizations in order to coordinate joint projects and share experiences. A particular goal was to maintain a common view for the future and to develop a stronger inter-organization CB Strategy and Work Programme.



*The Participants at the 7<sup>th</sup> Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG Capacity Building Coordination Meeting*

Participants presented their organization’s CB strategies, provided an update on their CB activities in the last year, shared lessons learned, particularly on strengths and shortcomings, opportunities and advantages in the implementation process, and offered information regarding their standardization procedures. IHO and IOC presented their revised Capacity Building strategies. The CBSC Chair reported on the IHO’s latest institutional education and training program developments, and, in particular, the recently inaugurated Category A Hydrography Programme in cooperation with the University of Southern Mississippi and funded by the CB Fund through a generous contribution from the Republic of Korea.



Partner organizations presented lessons learned, their procedures, mechanisms, challenges and outcomes in dealing with funding agencies. Participants also committed to offer assistance among the members in obtaining high level contacts in countries where the organizations need to improve awareness.

Each organization presented its 2014 Capacity Building Work Programmes followed by a panel session to assess the priorities and joint policies that could reinforce each CB programme. Participants examined a number of existing and potential projects that could be further developed under a joint partnership. A common vision for the future is to bring disciplines together in order to create an inter-disciplinary CB approach.

Participants also agreed to investigate joint projects to deliver 'green' seminars, to increase activity and awareness in terms of marine spatial planning and to develop a case study for West Africa. Representatives also agreed to consider presenting a joint paper to the next session of the IMO Technical Co-operation Committee regarding joint CB activities.

#### ***Task 3.3.4 IHO Capacity Building Strategy***

The XVIII<sup>th</sup> IHC agreed to task the CBSC to review the IHO CB Strategy focusing on IHO objectives and to consider the financial implications, and to report to the 5<sup>th</sup> Extraordinary International Hydrographic Conference.

The Strategy Working Group presented a draft revised CB Strategy to CBSC11 that approved the way forward. The working group continued during the year to further develop the draft document for submission to CBSC12 for approval before reporting to the EIHC-5.

#### ***Task 3.3.5 Capacity Building Work Programme***

The Capacity Building Work Programme is developed by the CBSC and subsequently endorsed by the IRCC. More details about the activities in the CBWP are described under Elements 3.4 and 3.5.

#### ***Task 3.3.6 Follow-up of CB activities and initiatives***

The IHB, on behalf of the CBSC, continuously monitored the follow-up of CB activities and initiatives. One IHB Director and one Assistant Director were engaged in this work. Additionally, the President, both Directors and the Assistant Directors continuously monitor CB activities undertaken in each of the RHC areas.

#### ***Task 3.3.7 FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)***

The 36<sup>th</sup> Meeting of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC-36) was held at the Hydrographic Institute of the Portuguese Navy from 15 to 25 April. The meeting was attended by nine members of the Board. Director Mustafa Iptes and Assistant Director Alberto Costa Neves (IBSC Secretary) represented the IHB.



The Board assessed sixteen programmes for Hydrographic Surveyors: ten were recognized or re-recognized, four were not recognized, one was granted a one-year extension and one will be exceptionally reviewed intersessionally. The Board also approved the procedures for on-site reviews, which is the process being introduced to confirm the status of recognized programmes and provide mid-term feedback from the Board.

The Board reviewed the positive feedback received in response to the White Paper on the development of a new edition of the Standards, S-5 - *Standards of Competence for Hydrographic Surveyors* and S-8 - *Standards of Competence for Nautical Cartographers*, and submitted an implementation plan for endorsement by IRCC-5. The current editions of the Standards were also reviewed and the revision plans were submitted to IRCC-5 for endorsement.

A code of conduct was adopted by the Board and will be incorporated into its Rules of Procedure. Prof. Dr. Nicolas Seube (IHO, France) was elected as the new Chair. Prof. Dr. Mohd Razali Mahmud (FIG, Malaysia) and Mr. Ron Furness (ICA, Australia) were elected as Vice Chair 1 and Vice Chair 2.

The number of Hydrographic Surveying and Nautical Cartography programmes continues to increase. In 2013, there were 45 Hydrography, six Cartography and one Regional Scheme for Individual Recognition (Hydrography) programmes recognized around the world.

### **Task 3.3.8 Provide guidance to training institutions**

The IHB actively interacted with training institutions providing guidance regarding recognition and provision of training and education. Interaction opportunities arise from the recognition processes, during the preparation of CB projects and also during seminars and RHC meetings.

## Element 3.4 Capacity Building Assessment

### Task 3.4.1 Technical and Advisory Visits

Execution of the technical and advisory visits planned for 2013 are summarized in the following table:

Nº	Events	RHC	Implementation
1	Technical Assessment & Advice - Tonga	SWPHC	Led by LINZ with Risk Assessment POSTPONED TO 2014 due to unavailability of the personnel
2	Technical visit to Cook Islands to facilitate National Hydrographic Requirements	SWPHC	Led by LINZ with Risk Assessment 7-18 Oct 2013 DONE
3	Technical Visit to Government high authorities - Eritrea and Sudan	NIOHC	POSTPONED due to administrative issues
4	Technical Visit to Cambodia	EAHC	From 2011 & 2012 CBWP, Led by Philippines, 4-6 Dec 2013 DONE
5	Technical advisory & Assessment Visit – Sri Lanka	NIOHC	From 2012 CBWP. Led by UKHO with Consultant. Postponed to 2014 due to administrative issues
6	Technical High Level Visit - UAE	RSAHC	From 2012 Management Plan. Led by IHB with UKHO, 8-12 Dec 2013 DONE
7	High Level Visit to MOWCA	EAtHC	From 2012 Management Plan. Led by SHOM, 18-20 Nov 2013 DONE

### Task 3.4.2 Review existing CB procedures and develop new ones

The IHB continued developing procedures to improve the effectiveness of CB activities. During the year two new procedures were proposed and approved by the CBSC: Procedure 7 (application for courses, technical workshops, seminars and financial assistance) and Procedure 8 (project finance management).

Norway and the IHB continued work on specifications for a Capacity Building Management System, in order to incorporate the development of the procedures, the databases and the publications. The management system will be a comprehensive tool to support the CB programme, to monitor the follow-up activities and to support the decision-making process.

### Task 3.4.3 Enhance publication C-55

See Task 3.6.1.2.

## Element 3.5 Capacity Building Provision

### **Task 3.5.1 Raise awareness on the importance of hydrography**

The IHB Directing Committee continued to work on a schedule of visits to improve global awareness, engage external stakeholders such as the United Nations, IMO, IALA, European Commission, funding agencies, academia and industry in general. This included visits to high level authorities in several countries, participation in Regional Hydrographic Commission meetings, participation in various seminars and conferences, and the active promotion of IHO activities in specialized magazines and journals.

### **Task 3.5.2 Technical workshops, seminars, short courses**

Execution of the following seminars, workshops and short courses planned in 2013 are summarized in the following table:

No.	Events	RHC	Implementation
1	MSI (training on establishment of MSI structure and basic MSI procedures)	MACHC	Trinidad and Tobago, 20-22 May 2013 DONE Led by USA DONE
2	Advanced Chart Production in Sri Lanka	NIOHC	Colombo, Sri Lanka, 11-15 Feb 2013 DONE
3	Chart Production training course in Mozambique	SAIHC	Maputo, Mozambique, 23-27 Sep 2013 DONE
4	MSI (training on establishment of MSI structure and basic MSI procedures)	SAIHC	Fish Hoek, S. Africa, 16-18 Dec 2013 DONE Led by UK DONE
5	Workshop on Port & Shallow Water Surveys	RSAHC	Manama, Bahrain, 1st half Dec 2013 Led by UK POSTPONED TO 2014 due to administrative issues
6	Seminar on S-100	EAHC	Pusan, Korea, 9-13 Sep 2013 Led by ROK DONE
7	Regional Workshop in Hydrographic Production Database (HPD)	SEPRHC SWAtHC	Lima, Peru, 2-6 Sep 2013 Led by Peru DONE
8	Two-week Regional Training Course on Basic Hydrography and Hydrographic Awareness	SWPHC NIOHC	Suva, Fiji, 10-21 Feb 2014 Led by New Zealand. POSTPONED TO 2014 due to administrative issues
9	Two-week Regional Training Course on Basic ENC and ENC Production	EAtHC SAIHC	Dar Es Salaam, Tanzania, Led by UK, POSTPONED TO 2014 due to administrative issues
10	5th Course on Hydrographic Data Processing and Marine	IHB	Taunton, UK, 02 Sep-13 Dec 2013 Led by UK DONE
11	Hydrographic Administration Training Placements with Regional HO for Vanuatu and Timor Leste	SWPHC	From 2012 CBWP Led by Australia POSTPONED TO 2014 2014 due to administrative issues

12	Self Training Course preparation (MSI)	IHB	From 2012 CBWP Led by IHB POSTPONED TO 2014 due to administrative issues
13	Administration for the CB Management	CBSC	For CBA. Led by IHB DONE
14	Cat A Hydrography Programme (USM)	IHB	USM 7 Aug 2013 - 8 Aug 2014 Led by IHB DONE
15	Development and delivery of a basic Training for Trainers (TFT) (EAHC Members)	EAHC	Busan, Korea, 18-29 Nov 2013 Led by UK DONE
16	MSDI and Database Management (EAHC Members)	EAHC	From 2012 Manag. Plan. Singapore, 7-11 Oct 2013 DONE
17	S-100 Exchange of Information Workshop	SEPRHC	From 2012 Manag. Plan. Guayaquil, Ecuador, 12-15 Nov 2013 DONE
18	GEBCO Training Project (UNH)	IHB	Durham, New Hampshire, USA, 22 Aug 2013 - 22 Aug 2014 DONE

### ***Task 3.5.3 Hydrographic and Nautical Cartography Courses***

Courses and training delivered in 2013 are shown in the table associated with Task 3.5.2.

The selection of trainees and oversight of the Category A hydrographic training programme at the University of Southern Mississippi sponsored by the Republic of Korea (ROK) was undertaken by an IHO/ ROK Programme Management Board.

### ***Task 3.5.4 On the Job Training (ashore / on board)***

Activity conducted during 2013 is shown in the table associated with Task 3.5.2 (Event number: 3, ashore).

***Task 3.5.5 IHB, to ensure awareness of multilateral or bilateral projects with hydrographic and/or cartographic components, and to provide advice to governments, project managers and funding agencies on the importance of including a hydrographic Capacity Building Component.***

Director Mustafa Iptes paid high level visits to the UN Development Program, UN Environmental Program and World Bank to seek opportunities for support and funding for the IHO Capacity Building Programme as well as to investigate potential opportunities in existing multilateral and regional projects. The Directing Committee mainly focussed on assisting in the development of regional projects in the South-West Pacific, Caribbean and West Africa regions.

### ***Task 3.5.6 CBSC to foster bilateral agreements in order to help satisfy SOLAS V/9***

Technical visits continued to be the principal way of identifying areas where bilateral agreements may help to further develop the provision of hydrographic services.

## Element 3.6 Coordination of Global Surveying and Charting

### **Task 3.6.1 Publication C-55: status of hydrographic surveying and nautical charting worldwide**

The following table lists the countries for which updates to existing C-55 entries were received in 2013:

IHO Member States	Non IHO Member States
Brazil	Benin (via France)
Cameroon (via France)	Comoros (via France)
Cyprus	Congo (via France)
Denmark	Côte d'Ivoire (via France)
Finland	Djibouti (via France)
France	Equatorial Guinea (via France)
Greece	Gabon (via France)
Iran	Guinea (via France)
Ireland	Lithuania
Monaco (via France)	Madagascar (via France)
Morocco	Mauritania (via France)
Netherlands	Senegal (via France)
New Zealand	Togo (via France)
Qatar	
Sweden	
UK	
Ukraine	

The IHB produced an advanced draft of a Geographic Information System (GIS) data model to support C-55 and associated regional information requirements and developed a demonstration user interface covering the Antarctic region (see task 3.1.16). A user requirements specification for an IHB GIS system was developed during the year in order to expand the Antarctic demonstration model and to assist in the selection of a suitable GIS software platform.

### **Task 3.6.2 WEND WG to foster the implementation of the WEND principles, monitor progress and report to IRCC**

The principal objective of the WENDWG is to monitor and advise IRCC on the achievement of adequate ENC coverage that meets the SOLAS V/19 carriage requirements for ECDIS. WENDWG reported to IRCC a number of proposals as reported under Task 3.1.17.

### **Task 3.6.3 RHC to coordinate ENC schemes, consistency and quality**

Guided by IHO Publication S-11, RHC's are expected to coordinate the development and maintenance of small/medium scale ENC schemes and to ensure that consistent parameters are used for consistency and quality. RHCs have also been invited to monitor and report on gaps and overlaps in ENC coverage on a regularly basis. By 2013, most RHCs had established an international charting coordination working group to undertake these roles.

As far as ENC coverage was concerned, reporting from individual RHCs to the IHB or the WENDWG was inconsistent. However, an examination of the IHO ENC Catalogue, compiled primarily from data provided by the two established RENC organizations and the UKHO, showed that ENC small/medium scale coverage was generally satisfactory, though there were a number of instances of overlapping or duplicated data in the same usage band, as well as some gaps in coverage. At larger scales, there were still a number of ports, harbours and approaches for which there was not an ENC to correspond to a published paper chart of the same area.

The following table shows the statistics reported annually by the IHO to the IMO concerning global ENC coverage. By the end of 2013, the figures had not changed significantly from those reported in May.

	May 2009	May 2011	May 2013
Small-scale ENCs (planning charts)	~100%	~100%	~100%
Medium-scale ENCs (coastal charts)	77%	88%	90%
Large-scale ENCs (top 800 ports)	84%	94%	96%

#### ***Task 3.6.4 Maintenance of INT chart schemes and improvements of availability of the INT chart series***

The purpose of the IHO INT chart series is to create a compact set of medium and large-scale charts that are specifically designed for planning, landfall and coastal navigation and access to ports used by ships engaged in international trade. The designation of the limits and scale for each INT chart and the designation of which country will be the primary producer of each INT chart are managed by the relevant RHC.

The following table summarizes the status of the INT chart scheme at the end of 2013:

Region	Coordinator	Commission	Scheduled	New publications reported in 2013	Published Total
A	USA/NOS	USCHC	Not known	0	15
B	USA/NOS	MACHC	71	2	30
C1	Brazil	SWAtHC	51	1	31
C2	Chile	SEPRHC	44	0	7
D	UK	NSHC	214	1	213
E	Finland	BSHC	295	5	278
F	France	MBSHC	246	0	157
G	France	EAtHC	172	0	124
H	South Africa	SAIHC	114	4	84
I	Iran	RSAHC	116	3	65
J	India	NIOHC	166	5	111

K	Japan	EAHC	293	1	238
L	Australia	SWPHC	62	0	56
M	HCA-HPWG	HCA	111	2	73
N	Norway	ARHC	Not known	0	8
1 :10 Million	IHB	CSPCWG	25	0	24

## Element 3.7 Maritime Safety Information

### ***Task 3.7.1 Sub-Committee on the World-Wide Navigational Warning Service***

The Sub-Committee on the World-Wide Navigational Warning Service (WWNWS) monitors and guides the IHO/ IMO World Wide Navigational Warning Service which includes NAVAREA and coastal warnings. The Sub-Committee is responsible for studying and proposing new methods to enhance the provision of navigational warnings to mariners at sea, facilitating the implementation of the major changes in procedures for dissemination of navigational warnings and providing appropriate guidance to concerned IHO Member State Representatives to further the evolution of the WWNWS. The Sub-Committee also maintains a close liaison and cooperation with the World Meteorological Organization (WMO) for its Worldwide Met-Ocean Information and Warning Service (WMMIWS).

The 5<sup>th</sup> meeting of the WWNWS Sub-Committee (WWNWS-5) was held at the IHB in Monaco, from 1 to 4 October under the chairmanship of Mr Peter Doherty (USA-NGA). The meeting was attended by 42 delegates from 22 IHO Member States, IHB, WMO International Mobile Satellite Organization (IMSO), Inmarsat Global Ltd and Iridium Satellite LLC. The delegates included representatives of 19 NAVAREA Coordinators, 1 Sub-Area Coordinator and 5 National Coordinators. The IHB was represented by Assistant Director Alberto Costa Neves.

The Sub-Committee reviewed the WWNWS documentation, received MSI self-assessment reports (see task 3.7.3) assessed the content and success of the MSI Capacity Building training courses delivered during the year and prepared a report on the outcome of WWNWS-5 for submission to the 1<sup>st</sup> session of the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) in 2014.

The Sub Committee received reports from the Chair of the IMO NAVTEX Panel, the IMO SafetyNET Panel and WMO. Inmarsat Global Ltd provided a report, which included a comprehensive brief on Inmarsat Fleet Broadband and Maritime Safety Data Service (MSDS) services. The Sub-Committee also received a comprehensive brief on the present state and future development of the Iridium Satellite system.

### ***Task 3.7.2 WWNWS Document Review Working Group.***

The WWNWS relies on various IMO/IHO documents to provide guidance for the promulgation of internationally co-ordinated NAVAREA and Coastal warnings. Further, the WWNWS systems used for dissemination of the maritime safety information, SafetyNET and NAVTEX respectively, each have their own guidance document. Due to the varied update cycle of these documents, there were many inconsistencies which caused confusion for users. The WWNWS-SC established a Document Review Work Group (DRWG) in order to bring the WWNWS Guidance documents into alignment and ensure that there is 100% consistency between them.



***Task 3.7.3 Maintain and extend the following IHO standards, specifications and publications***

An editorial review of the Joint IMO/IHO/WMO Manual on MSI was completed at WWNWS-5. After approval by IHO Member States and the WMO, the draft revision will be presented to the first NCSR session in early July 2014 for endorsement and subsequent presentation at the 94<sup>th</sup> session of the IMO Maritime Safety Committee for final approval and adoption. The work will then be finalized at the next meeting of the WWNWS-SC in 2014 prior to submission to Member States, the WMO and the IMO for adoption.

***Task 3.7.4 Liaise with IMO and WMO on the delivery of MSI within the GMDSS***

The WWNWS Sub-Committee, with support from the IHO Capacity Building Programme, continued to deliver its comprehensive training course that provide practical guidance to relevant authorities in countries that are drafting navigational warnings or broadcasting Maritime Safety Information (MSI) for the high seas under the Global Maritime Distress and Safety System (GMDSS). The objective of the course is to increase the flow of MSI to NAVAREA Coordinators for promulgation, and ultimately to emphasize the importance of establishing expertise in the countries within these NAVAREAs, to fulfil the role of National Coordinators.

The first of two MSI courses was held from 20 to 22 May in Trinidad and Tobago, in support of the Meso American & Caribbean Sea Hydrographic Commission. Eighteen students attended from 13 different countries. The second MSI course was conducted in South Africa from 16 to 18 December, in support of the Southern Africa and Islands Hydrographic Commission. Twelve students attended from ten different countries.

***Task 3.7.5 Contribute to the IMO work items on the modernization of GMDSS***

The WWNWS-SC reviewed the relevant matters considered and decisions taken during the 92<sup>nd</sup> session of the IMO Maritime Safety Committee (MSC 92) and the 59<sup>th</sup> session of the Sub-Committee on Safety of Navigation (NAV 59). The WWNWS-SC raised its concerns at IMO MSC 92 that the company Iridium had provided limited details on how it might fulfill the requirements outlined in IMO Resolution A.1001(25) - *Criteria for the Provision of Mobile Satellite Communication Systems in the GMDSS*. Iridium is the first commercial satellite provider other than Inmarsat, to attempt to gain approval based on the relevant IMO Resolution (A.1001(25)).

Reviewing the relevant matters considered, and decisions taken, during NAV 59, the WWNWS-SC took note of the approval of the policy on and the new symbols for AIS aids to navigation. The WWNWS-SC discussed the potential use of AIS to broadcast MSI, as discussed by the United States Coast Guard at the 2013 annual meeting of the Radio Technical Commission for Maritime Services (RTCM). It was observed that the WWNWS, particularly the NAVAREA Coordinators, should monitor the broadcast of MSI via AIS to ensure the WWNWS is not compromised.

***Task 3.7.6 Improve the delivery and exploitation of MSI to global shipping by taking full advantage of technological developments***

At the 5<sup>th</sup> meeting of the WWNWS-SC, the representatives of the 19 NAVAREAs and one Sub-Area presented their MSI Self Assessments. The MSI Self-Assessment document

requires NAVAREA Coordinators to complete an MSI Quality Management Survey. There was a pleasing high level of consistency of service described in all of the reports that were submitted.

Also, at WWNWS-5 Director Gilles Bessero presented an overview of the S-100 geospatial data framework model underpinning the next-generation Electronic Navigational Chart (ENC). France presented a paper on the potential for an S-100-based digital data exchange format for MSI. As a result, the WWNWS-SC agreed to establish a working group to develop an MSI data exchange standard based on S-100.

## Element 3.8 Ocean Mapping Programme

The GEBCO (General Bathymetric Chart of the Oceans) is a joint programme that is executed under the governance of the IHO and the Intergovernmental Oceanographic Commission (IOC). GEBCO is directed by a Guiding Committee made up of representatives from both IHO and IOC and is supported by a Technical Sub-Committee on Ocean Mapping (TSCOM), a Sub-Committee on Undersea Feature Names (SCUFN), a Sub-Committee on Regional Undersea Mapping (SCRUM), and a Nippon Foundation/GEBCO Training Project Management Committee. Additional ad hoc working groups are convened as necessary. Through the work of its organs, GEBCO produces and makes available a range of bathymetric data sets and products, including gridded bathymetric data sets, the GEBCO Digital Atlas, the GEBCO world map and the GEBCO Gazetteer of Undersea Feature Names. GEBCO maintains a comprehensive website at: <http://www.gebco.net>

### **Task 3.8.1 Conduct meetings of relevant GEBCO bodies:**

#### Task 3.8.1.1 GEBCO Guiding Committee

The 30<sup>th</sup> meeting of the IHO-IOC GEBCO Guiding Committee (GGC) was held at the *Istituto di Scienze Marine, Consiglio Nazionale delle Ricerche*, Venice on 11 October. All current IHO representatives of the Guiding Committee were present. The chair, Dr Robin Falconer (IOC) (New Zealand) highlighted the contributions made by members who had recently stood down; these included Ingénieur Général Etienne Cailliau (IHO) (France), Dr Kunio Yashima (IHO) (Japan) and Dr Chris Fox (IHO) (USA). Dr Falconer announced his intention to step down as Chair of the GGC at the end of the meeting but to remain as a member of the Committee until the next meeting in 2014. Mr. Shin Tani (IHO) (Japan) and Dr Martin Jakobsson (IOC) (Sweden) were elected as Chair and Vice-Chair respectively to fill the vacancies.

The GGC received brief reports from its Sub-Committees and endorsed the work which they had undertaken. The GGC also received reports from key personnel performing functions on behalf of GEBCO as well as reports from its parent bodies, IHO and IOC, on activities since the previous meeting.

The GGC reviewed its Work Programme for the quinquennial period 2013 to 2017 which had been approved by the IHO's Inter-Regional Coordination Committee (IRCC) and commenced development of its Work Plan for 2014 to 2015. The Committee also developed proposed adjustments to its Terms of Reference and Rules of Procedure for submission to IHO and IOC Member States for approval.



*The IHO-IOC GEBCO Science Day*

*Tasks 3.8.1.2 and 3.8.1.3 Technical Sub-Committee on Ocean Mapping (TSCOM) and Sub-Committee on Regional Undersea Mapping (SCRUM)*

The GEBCO TSCOM and the SCRUM held joint meetings between 7 and 9 October. Dr. Martin Jakobsson (IOC) (Sweden) and Dr Bruce Goleby (IOC) (Australia) chaired the joint meeting where a number of reports and presentations on ocean mapping activities were provided for the following regions; the Baltic Sea, Arctic, Antarctic, the Caribbean Sea and the Gulf of Mexico and the Indian Ocean. These were followed by progress reports on the development of GEBCO's bathymetric grids, the Global Multi-Resolution Topography (GMRT), the European Marine Observation and Data Network (EMODnet), collaboration with Google Ocean and the future of the GEBCO outreach programme.

Assistant Director Wyatt provided a briefing on a possible IHO crowd-sourced bathymetry project. Breakout groups were convened to discuss issues concerning; the production of a new GEBCO 100 metre resolution grid; the inclusion of regional compilations in the GEBCO grid; the outreach programme and future initiatives; metadata, and the creation of common data store.

In conjunction with its meeting, the GGC held its 8<sup>th</sup> consecutive "Bathymetric Science Day". This included a poster session and presentations on a diverse range of topics which included; bathymetry in the Antarctic, the provision of harmonized digital bathymetric data for European waters, Google Ocean, a new Baltic bathymetry grid programme, bringing ocean data to the Cloud, vertical transformations exploring a GIS approach, the Vega 2013 Greenland expedition, post-seismic crustal movement of the 2011 Tohoku earthquake, AUV dives on a volcanic caldera, summary of 2012-13 operations in the high Arctic, application of LIDAR on exposed and awash rocks, active tectonic, morphology and submarine deformation in the northern Gulf of Eilat/Aqaba, high resolution bathymetry of the lagoon of Venice, bathymetric uncertainty estimation for interpolators and the Italian experience of handling very large amounts of high resolution bathymetric data at a national scale. The associated presentations can be downloaded from the GEBCO website.

*Task 3.8.1.4 Sub-Committee on Undersea Feature Names (SCUFN)*

The SCUFN is responsible for selecting names of ocean undersea features for use on GEBCO graphical and digital products, on the IHO small-scale International chart series, and on the regional International Bathymetric chart (IBC) series. In 2013, its activities involved four of the six IHO Member States represented in SCUFN.

The 26<sup>th</sup> meeting of SCUFN was held at the headquarters of the Japanese Hydrographic and Oceanographic Department (JHOD) in Tokyo, Japan from 23 to 27 September.

The Sub-Committee examined 107 names or name proposals. 84 of these were recommended by the Sub-Committee for inclusion in the GEBCO Gazetteer (see task 3.8.4.4). A web Gazetteer interface, which is the internet version of the GEBCO Gazetteer, was launched during the meeting via the GEBCO website at:

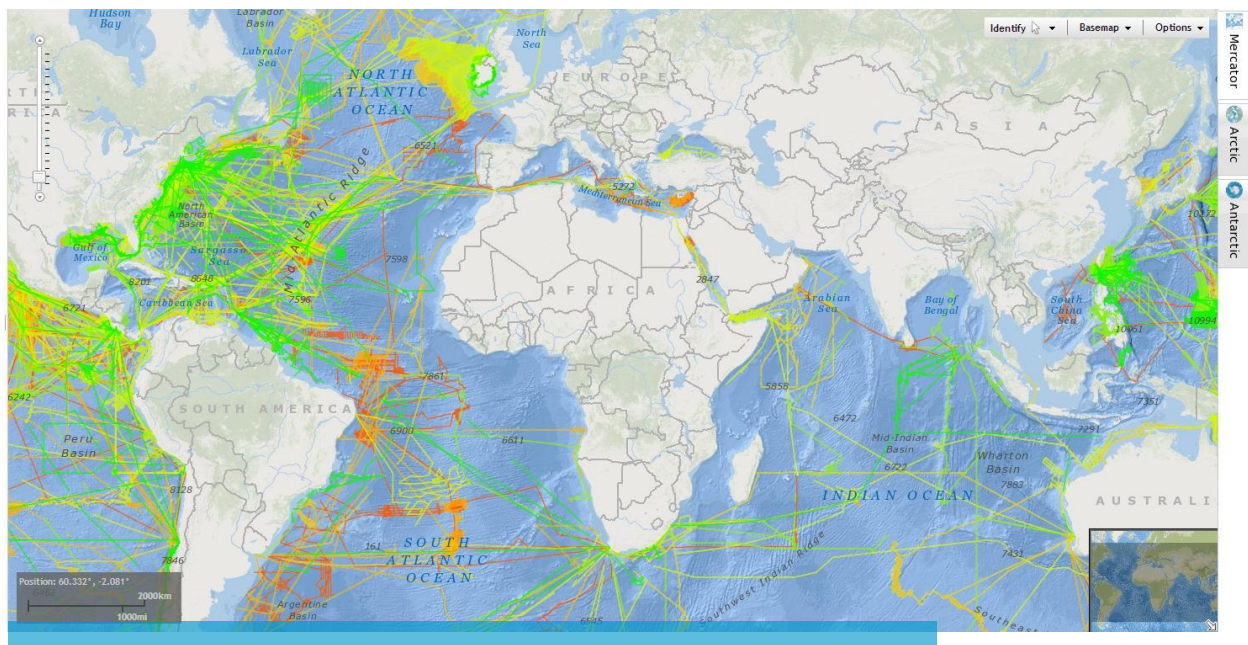
[http://www.gebco.net/data\\_and\\_products/undersea\\_feature\\_names/](http://www.gebco.net/data_and_products/undersea_feature_names/).

This web-based application provides access to any undersea feature name in the Gazetteer and its associated details, including showing the feature geometry on a background bathymetric map. Development of the web Gazetteer interface was overseen by the IHO Data Centre for Digital Bathymetry (DCDB), hosted at the US National Geophysical Data Centre (NGDC).

The Sub-Committee progressed and finalized, intersessionally, a new edition of B-6 *Standardization of Undersea Feature Names*, including a comprehensive revision of all the undersea feature generic terms and their definitions (see task 3.8.4.2).

### **Task 3.8.2 Ensure effective operation of IHO Data Centre for Digital Bathymetry (DCDB)**

As part of its commitment to the collection and management of global bathymetric data the IHO operates the IHO Data Centre for Digital Bathymetry. The DCDB collects and quality checks oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. These data is used in the production of more accurate and comprehensive bathymetric maps and grids, particularly in support of the GEBCO Programme (see task 3.8.4 and 3.8.5)



President Robert Ward visited the IHO DCDB in July where he discussed the feasibility of extending the DCDB to include data collected in the world's near-shore areas and a project that will enable ships to upload their passage soundings - so-called *crowd-sourced bathymetry*.

The management staff involved in the operation of the DCDB were instrumental in the development of the GEBCO web Gazetteer interface which was released in September (see also task 3.8.1.4).

Work was initiated on the development of the concept of a “DCDB Data Store” which will be an extension to the existing DCDB. The data store will include datasets submitted in the form of grids, point soundings, single beam and multi-beam data and will be accessible by IHO Member States, GEBCO members and others who want to build grids or work with the data.

### **Task 3.8.3 Encourage the contribution of bathymetric data to the IHO DCDB**

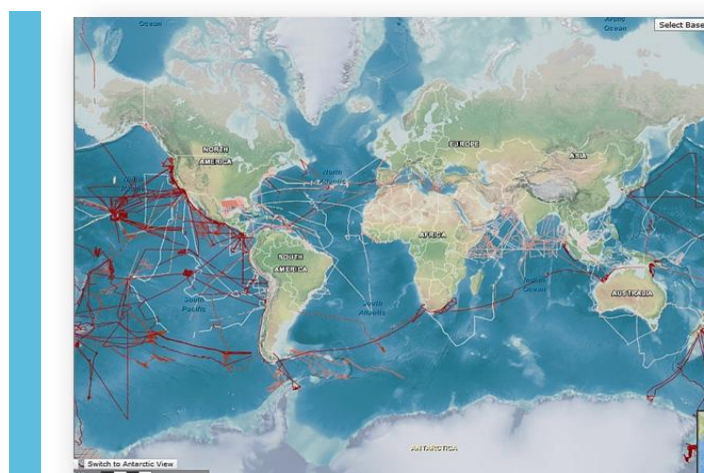
One of the primary objectives of the GEBCO programme is to be an authoritative source of bathymetry and undersea feature information. In order to achieve this, GEBCO proactively collects, stores and disseminates bathymetric data for the world’s oceans. GEBCO has worked towards improving its participation in regional mapping activities and has also appointed representatives to participate in selected RHC meetings.

During 2013 GEBCO commenced work on producing a bathymetric map and grid of the Indian Ocean. The primary bathymetric sources will be from scientific cruise data obtained in both shallow and deep water, as well as hydrographic survey data in shallow water, combined with satellite altimetry data as required. Traditionally GEBCO has focused on waters deeper than about 200m, however, it is now actively collecting data in shallow water areas to support activities such as coastal zone management and development and the mitigation of seaborne disasters such as storm and tsunami inundation.

### **Task 3.8.4 Maintain IHO bathymetric publications:**

- **B-4 - Information concerning recent bathymetric data**

Bathymetric data from 292 ships tracks were added to the IHO DCDB during 2013. These data can be viewed or downloaded using the web mapping facility provided at: <http://maps.ngdc.noaa.gov/viewers/geophysics/>.



**Bathymetric data included in the DCDB during 2013**

- **B-6 - Standardisation of undersea feature names**

A new edition 4.1.0 of IHO Publication B-6, prepared by SCUFN (see task 3.8.1.4), was published in September. It includes in particular:

- new and revised definitions for undersea feature generic terms;
- a new bilingual English/French format for proposals for undersea feature names;
- a user's guide for the preparation of undersea feature name proposals.

- **B-8 – GEBCO Gazetteer of undersea feature names**

Following the release of the GEBCO web Gazetteer interface in September (see task 3.8.1.4), IHO Publication B-8 can now be derived directly from the underlying database of the on-line gazetteer. All changes agreed since the previous edition of the Gazetteer in October 2012 were incorporated in the on-line Gazetteer.

- **B-9 - GEBCO Digital Atlas**

B-9 is a two-volume DVD and CDROM set which contains: the GEBCO\_08 global bathymetric grid at 30 arc-second intervals; the GEBCO One Minute Grid global bathymetric grid, a global set of digital bathymetric contours and coastlines, the GEBCO gazetteer of undersea feature names and a software interface for viewing and accessing the data sets. During 2013 one hundred and two copies of the GDA were distributed. Forty-eight of these were sold and a further 54 were distributed as complimentary copies for educational purposes.

- **GEBCO Cook Book**

The GEBCO Cook Book (B-11) is a technical reference manual that has been developed to assist and encourage participation in the development of bathymetric grids. It is an important GEBCO reference document that is used by academic institutions and hydrographic organizations. The Cook Book covers a wide range of topics such as data gathering, data cleaning, gridding examples and provides an overview of different software applications used for producing bathymetric grids.

The Cook Book was originally released in October 2012, and is updated periodically whenever new contributions become available. Three updated editions were published successively in February, June and November.

### **Task 3.8.5 Contribute to outreach and education about ocean mapping**

At the 30<sup>th</sup> GEBCO Guiding Committee it was decided that its Outreach and Education Working Group (OEWG) should create a roadmap for outreach programmes with the objective of making GEBCO's outreach programme more systematic, more technically adaptive and more accessible for the public, including students. It was agreed that there was a need to develop more products beyond just maps. In addition, there was a need to have GEBCO events and activities better advertised, through a number of products and online/offline promotions, covering the short, medium and long term. The members of the OEWG, who had been selected based on their previous experience, were tasked to carry out and/or coordinate activities covering products and promotional events.

A significant GEBCO annual outreach event is the annual Science Day, which consists of oral presentations and poster displays on topics relating to ocean-floor mapping and its applications. Attendance is open and the Science Day is usually held during GEBCO's annual TSCOM and SCRUM meetings. A Science day was held in conjunction with the 30<sup>th</sup> meeting of the GGC and the associated meetings of TSCOM and SCRUM. (See also Tasks 3.8.1.2 and 3.8.1.3).

In addition to the annual Science Day event, GEBCO members give oral and poster presentations about GEBCO's work and products at many international meetings and events.

Links to posters and presentations are available on GEBCO's web site. GEBCO also generated a brochure (available at the GEBCO's web site) about GEBCO, its data sets and activities. GEBCO has established a Facebook page at: <https://www.facebook.com/GEBCO>

In 2009, GEBCO initiated a project to produce a series of desktop globes featuring GEBCO bathymetry. The seafloor data portrayed on the globes is derived from the GEBCO one-half-arc-minute digital database. The globes are available for purchase from the IHB in sizes of 14cm, 32cm and 68cm.

#### ***Task 3.8.6 GEBCO Web Site kept current and updated regularly***

The GEBCO web site provides access to information about GEBCO's products, services and activities. Since its launch in July 2008 until mid 2013, there have been over 929,000 pages viewed on the web site.

GEBCO bathymetric maps and data sets can be downloaded from the website. These continue to be accessed by a wide user community that include commercial and academic sectors and the general public. Since the release of the GEBCO global 30 arc-second interval grid in January 2009, it has been downloaded over 22 000 times. The Source Identifier (SID) grid has been downloaded 5 260 time since its release in November 2009.

The GEBCO web site also provides access to the world grid via a Web Map Service (WMS). Information on the WMS which was released in 2011 is available from the GEBCO web site at: [http://www.gebco.net/data\\_and\\_products/gebco\\_web\\_services/web\\_map\\_service/](http://www.gebco.net/data_and_products/gebco_web_services/web_map_service/)

In addition to general site maintenance, the following pages or sections were added to the GEBCO web site during 2013; news and events, presentation and poster information for the Seventh GEBCO Science Day and a new page for the GEBCO Cook Book.

#### ***Task 3.8.7 Develop short course and course material on compiling DBMs***

No activity was conducted in 2013 for the development of short courses or course material related to compiling digital bathymetric models.

#### ***Task 3.8.8 Update and enhance the GEBCO Gazetteer (B-8) for internet access***

As reported earlier in this report, a GEBCO web gazetteer interface was developed under the supervision of the IHO DCDB and released in September (see tasks 3.8.1.4 and 3.8.4). The on-line gazetteer provides search capabilities that enable access to any registered undersea feature name and display its associated details, including showing the feature geometry on a background bathymetric map.

Maintenance of the underlying geospatial database of the on-line gazetteer will be carried out by a network of appointed editors (mainly, SCUFN members) under the coordination of an administrator. This is currently the SCUFN Secretary from the IHB.





### IHO/IHB Output Statistics

Table 1 summarizes the long term evolution of some significant indicators of the outputs of the IHO.

**Table 1**  
**IHO/IHB Output Statistics**

	2000	2006	2012 (Conference Year)	2013	Trend
Number of MS	69	72	81	81	↔
Annual Approved Budget (M€)	(14.6252FF) €2.2M	€2.7M	€2.9M	€2.9M	↔
Value of a Share	(24,650 FF) €3,758	€3,984	€3,984	€3,984	↔
Number of IHB Staff	21	19	19	19	↔
Number of seconded officers	0	0	2	2	↔
Number of RHCs +HCA	13	14	16	16	↔
Number of major coordinating committees			2	2	↔
Number of working level committees / subcommittees / WGs	11	12	14	16 <sup>1</sup>	↑
Number of inter-organizational bodies	5	5	5	6 <sup>2</sup>	↑
Number of CLs and FCCLs	56	91	109	81	↓
Total number of active IHO publications	35	36	48	48	↔

<sup>1</sup> IHO bodies active at the end of 2013:

Coordinating committees: 2 (HSSC, IRCC).

Other IHO bodies: 16 (TSMAD, DPSWG, DIPWG, SNPWG, CSPCWG, DQWG, MSDIWG, TWLWG, HDWG, SCWG, WWNWS, S100NW, CBSC, WENDWG, SRWG, FC). Two of these were established in 2013: SCWG and S100NW.

<sup>2</sup> Inter-organizational bodies active at the end of 2013: 6 (ABLOS, IBSC, GEBCO GC, TSCOM, SCUFN, SCRUM). 1 was established in 2013 (SCRUM).

	2000	2006	2012 (Conference Year)	2013	Trend
Number of IHO standards and technical reference documents <sup>3</sup>	18	24	28	28	↔
Number of new editions or revisions of IHO Publications	10	18	12	7 <sup>4</sup>	↓
Number of website pages	30	140	217	224	↑
Number of IHO meetings hosted in Monaco <sup>5</sup>	7	16	6	7	↑
Number of missions by IHB staff to represent IHB or IHO	57	56	52	84	↑

<sup>3</sup> based on the list in Appendix 1 to IHO Resolution 2/2007 as amended.

<sup>4</sup> 7 : includes the four standards reported under SPI5, the revision/update of B-11, publication of C-33 (English version) and publication of P-7 (Annual Report 2012).

The continuous updating of C-55, M-3, P-5 and S-32 is not counted in the total.

<sup>5</sup> includes sessions of the International Hydrographic Conference.

### New and Revised IHO Publications

The following new IHO publications or revised editions were issued during 2013 and are available from the IHO website.

DATE	TITLE	Announced Via CL
17/01	S-65 - ENC's Production, Maintenance and Distribution Guidance, Edition 2.0.0, April 2012, French version	CL 4/2013
17/01	S-4 - Chart Specifications of the IHO, Edition 4.3.0, August 2012, French version	CL 4/2013
11/03	S-57 – Appendix B1 – Annex A - Use of the Object Catalogue for ENC (UOC), Edition 3.1.0	CL 20/2013
11/03	S-99 - Operational Procedures for the organization and management of the S-100 Geospatial Information Registry, Edition 1.1.0	CL 20/2013
03/10	S-4 – Chart Specifications of the IHO, Edition 4.4.0, English version	CL 55/2013
30/10	P-7 - Annual Report of the IHO for 2012, Parts 1 & 2	CL 60/2013
08/11	C-33 - Manual on Tides, English version	CL 63/2013
21/11	B-6 - Standardisation of Undersea Feature Names, Edition 4.1.0	CL 67/2013
21/11	IHO-IOC GEBCO Gazetteer of Undersea Feature Names on the Web	CL 68/2013

## STATUS OF IHO Technical Standards

### New and Revised Publications

Date	Title	Implementing CL
17 January	ENC Production, Maintenance and Distribution Guidance, (S-65) Edition 2.0.0 April 2012. Chart Specification of the IHO (S-4) - Edition 4.3.0 August 2012. French versions.	CL4/2013
11 March	Adoption of New Editions of IHO Publications : S-57 & S-99 (Edition 3.1.0 of S-57 - Appendix B1 – Annex A “Use of the Object Catalogue for ENC (UOC)” Edition 1.1.0 of S-99 “Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry”)	CL20/2013
3 October	Publication of Edition 4.4.0 of S-4, Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO	CL 55/2013

### Status of IHO technical standards

Number	Name	Maintenance body	Current edition
<b>B-6</b>	Standardization of Undersea Feature Names (Guidelines Proposal Form Terminology )	SCUFN	Ed. 4.0.0 Nov. 2008
<b>S-5</b>	Standards of Competence for Hydrographic Surveyors	IBSC	Ed. 11.0.1 May 2011
<b>S-8</b>	Standards of Competence for Nautical Cartographers	IBSC	Ed. 3.0.0 2010
<b>S-4</b>	Regulations of the IHO for International (INT) Charts and Chart Specifications of the IHO <b>Note: New Edition 4.4.0 (See CL 55/2013 - October)</b>	CSPCWG	Ed. 4.4.0 Sept. 2013
<b>S-11 Part A</b>	Guidance for the Preparation and Maintenance of INT Chart schemes	CSPCWG	Ed. 2.0.5 May 2012
<b>S-12</b>	Standardization of List of Lights and Fog Signals	WG when/if required	Ed. 1.0.1 2006
<b>S-23</b>	Limits of Oceans and Seas	WG when/if required	Ed. 3.0.0 1953
<b>S-32</b>	Hydrographic Dictionary	HDWG	On-line publication
<b>S-32 Appendix 1</b>	Glossary of ECDIS-Related Terms	HDWG	Ed. 1.0.0 Sept. 2007
<b>S-44</b>	IHO Standards for Hydrographic Surveys	S44 WG when required	Ed. 5.0.0 Feb. 2008
<b>S-49</b>	Standardization of Mariners' Routeing Guides	CSPCWG	Ed. 2.0.0 April 2010

<b>S-52</b>	Specifications for Chart Content and Display Aspects of ECDIS	DIPWG	Ed. 6.0.0 March 2010
<b>S-52 Annex A</b>	IHO ECDIS Presentation Library	DIPWG	Ed. 3.4.0 Jan. 2008
<b>S-52 Appendix 1</b>	Guidance on Updating the ENC	WG when/if required	Ed. 4.0.0 April 2012
<b>S-53</b>	Joint IMO/IHO/WMO Manual on Maritime Safety Information	WWNWS	Ed. July 2009
<b>S-57</b>	IHO Transfer Standard for Digital Hydrographic Data	TSMAD	Ed. 3.1.0 Nov. 2000
<b>S-57 Appendix B.1</b>	ENC Product Specification	TSMAD	Ed. 2.0.0 Nov. 2000
<b>S-57 Appendix B.1 Annex A</b>	Use of the Object Catalogue for ENC	TSMAD	Ed. 3.1.0 Nov. 2012*
<b>S-58</b>	Recommended ENC Validation Checks <i>Note: Ed. 5.0 awaiting MS Approval 2014</i>	TSMAD	Ed. 4.2.0 Feb. 2011
<b>S-60</b>	Users Handbook on Datum Transformations involving WGS 84	WG when/if required	Ed. 3.0.1 Aug. 2008
<b>S-61</b>	Product Specifications for Raster Navigational Charts (RNC)	WG when/if required	Ed. 1.0.0 Jan. 1999
<b>S-63</b>	IHO Data Protection Scheme	DPSWG	Ed. 1.1.1 April 2012
<b>S-64</b>	Test Data Sets for ECDIS	TSMAD	Ed. 2.0.0 May 2012
<b>S-65</b>	ENC Production Guidance <i>Note: French version produced (See CL 4/2013 – January).</i>	TSMAD	Ed. 2.0.0 April 2012
<b>S-66</b>	Facts about Electronic Charting and Carriage Requirements	ICENC-PRIMAR Joint Information Working Group (JIWG), on behalf of HSSC	Ed. 1.0.0 Jan. 2010
<b>S-99</b>	Operational Procedures for the Organization and Management of the IHO Geospatial Information Registry <i>Note: New Edition 1.1.0 (See CL 20/2013 - March)</i>	TSMAD	Ed. 1.1.0 Nov. 2012*
<b>S-100</b>	IHO Universal Hydrographic Data Model Section 9 and other Portrayal related elements of S-100 Quality related elements of S-100	TSMAD DIPWG DQWG	Ed. 1.0.0 Jan. 2010

<b>S-10n</b> <i>(when adopted)</i>	<i>S-100 based Product Specifications</i>	<i>WG when/if required</i>	
<b>S-102</b>	Bathymetric Surface Product Specification		Ed. 1.0.0 April 2012
<b>C-17</b>	Spatial Data Infrastructures: “The Marine Dimension” - Guidance For Hydrographic Offices	MSDIWG	Ed. 1.1.0 Feb. 2011
<b>C-51</b>	A Manual on Technical Aspects of The United Nations Convention on the Law of The Sea – 1982	ABLOS	Ed. 4.0.0 March 2006

\* Editions approved in 2013 (CL 20/2013).

## List of IHB Missions 2013

DATE	NAME	MEETING	DESTINATION
<b>JANUARY</b>			
11 - 18	PHARAOH	TSMAD 25	Tokyo, Japan
20 - 01	WYATT	IMO COMSAR17 & WWNWS Doc Review	London, United Kingdom
20 - 25	IPTES	IMO COMSAR 17	London, United Kingdom
21 - 25	WARD	7 <sup>th</sup> EAHC Coordination Meeting	Busan, Republic of Korea
28 - 03	IPTES	Japan Capacity Building Coordination Meeting	Tokyo, Japan
29 - 31	BESSERO	E- Navigation Underway 2013	Copenhagen, Denmark
29 - 02	HUET	MSDI Forum & MSDIWG	Copenhagen, Denmark
<b>FEBRUARY</b>			
02 - 07	BESSERO	2 <sup>nd</sup> UNGGIM Forum	Doha, Qatar
13 - 15	IPTES	High Level Visit	New Delhi, India
18 - 22	IPTES	NOIHC 13	Yangon, Malaysia
18 - 23	WYATT	NOIHC 13	Yangon, Malaysia
26 - 28	IPTES	High Level Visit	Doha, Qatar
27 - 03	WYATT	ETMSS4	Tokyo, Japan
<b>MARCH</b>			
01-03	IPTES	High Level Visit	Kuwait City, Kuwait
03 - 07	WYATT	RSAHC	Riyadh, Saudi Arabia
03 - 07	IPTES	RSAHC	Riyadh, Saudi Arabia
06 - 07	BESSERO	18th MODEG Meeting	Brussels, Belgium
18 - 21	BESSERO	SWATHC 7	Buenos Aires, Argentina
17 - 22	WYATT	IMO DE 57	London, United Kingdom
18 - 21	WARD	IALA Enav 13 meeting	Paris, France
23 - 27	IPTES	USCHC 36	New Orleans, USA
28 - 29	IPTES	UNDP and UNEP Visit	New York, USA
<b>APRIL</b>			
01-02	IPTES	The Maritime Alliance meeting	San Diego, USA
03-05	IPTES	The World Bank Visit	W.DC, USA
04 - 05	BESSERO	2 <sup>nd</sup> EC IHO Meeting	Brussels, Belgium
08 - 10	WARD	IHO FIG Seminar	Southampton, United Kingdom
14 - 17	IPTES	IBSC 36	Lisbon, Portugal
18 - 19	IPTES	Japan Capacity Building meeting	Taunton, United Kingdom
15 - 17	BESSERO	NHC 57	Arko, Sweden
21 - 26	BESSERO	CIRM Annual Meeting	Paphos, Cyprus
<b>MAY</b>			
13 - 17	WYATT	TWLWG 5	Helsinki, Finland
20	WARD	Catapult EOS Workshop	Harwell, United Kingdom
21 - 24	WARD	ATCM 36	Brussels, Belgium
25 - 31	PHARAOH	ISO / TC211	Busan, Republic of Korea
26 - 05	IPTES	PMB3 / CBSC11/IRCC5	Wollongong, Australia
27- 01	WYATT	SCWG 1	Washington, USA
28 - 04	WARD	IRCC 5	Wollongong, Australia
29 - 04	COSTA NEVES	PMB3 / CBSC11/IRCC5	Wollongong, Australia

<b>JUNE</b>			
03 - 07	PHARAOH	SNPWG 16	Silverspring, USA
05 - 07	IPTES	IMO/IHO/IALA Regional Awareness Seminar	Bangkok, Thailand
10 - 14	PHARAOH	TSMAD 26	Silverspring, USA
11 - 19	WARD	IMO MSC 92	IMO, United Kingdom
12 - 22	WYATT	IMO MSC 92	IMO, United Kingdom
16 - 21	BESSERO	SEPRHC 11	Lima, Peru
19	COSTA NEVES	Primar	Stavanger, Norway
24 - 02	IPTES	IOC Assembly 27	Paris, France
24 - 28	PHARAOH	Joint Technical Experts WG	Taunton, United Kingdom
26	BESSERO	3 <sup>rd</sup> EC-IHO Meeting	Paris, France
27	BESSERO	Hydrographic Society	Cambridge, United Kingdom of Great Britain and Northern Ireland
27 - 28	WYATT	IOC Assembly 27	Paris, France
30 - 02	WARD	SRWG	Taunton, United Kingdom
<b>JULY</b>			
06 - 12	WARD	ESRI User Conference & DCDB	San Diego, USA
09 - 12	COSTA NEVES	IMO TC 63	London, United Kingdom
09 - 12	IPTES	IMO TC 63	London, United Kingdom
14 - 17	HUET	DQWG 7	Fredericton, Canada
14 - 19	WARD	IMO Council	London, United Kingdom
21 - 27	IPTES	High Level Visit	Albania-Bulgaria-Montenegro
23 - 28	WARD	UN GGIM 3	Cambridge, United Kingdom
29 - 02	IPTES	University of Southern Mississippi – Coordination Meeting	New Orleans, USA
<b>AUGUST</b>			
21 - 30	HUET	ICA Standards Commission	Dresden, Germany
25 - 28	WARD	ICA Conference	Dresden, Germany
26 - 28	MENINI	ICA Conference	Dresden, Germany
29	WARD	IOC Meeting	Paris, France
29	WYATT	IOC Meeting	Paris, France
30 - 01	WARD	JB – GIS	Potsdam, Germany
<b>SEPTEMBER</b>			
01 - 06	PHARAOH	IMO NAV 59	London, United Kingdom
01 - 06	BESSERO	IMO NAV 59	London, United Kingdom
01 - 09	WYATT	IMO NAV 59	London, United Kingdom
06	WARD	Nippon Foundation	London, United Kingdom
08 - 12	PHARAOH	S-100	Busan, Korea
15 - 19	PHARAOH	SAIHC 10	Lisbon, Portugal
16 - 18	IPTES	BSHC 18	Tallinn, Estonia
16 - 20	WARD	SAIHC 10	Lisbon, Portugal
19 - 21	IPTES	High Level visit	Lithuania
20 - 30	HUET	SCUFN 26	Tokyo, Japan
21 - 26	BESSERO	Seminar on Maritime Safety	Nouakchott, Mauritania



23 - 29	IPTES	MBSHC 18	Istanbul, Turkey
24 - 28	COSTA NEVES	MBSHC 18	Istanbul, Turkey
25 - 28	WARD	World Maritime Day at IMO	London, United Kingdom
29 - 04	WYATT	Polar Code WG	London, United Kingdom
<b>OCTOBER</b>			
06 - 12	WYATT	GEBCO 2013	Venice, ITA
06 - 12	WYATT	GEBCO 2013	Venice, ITA
09 - 13	IPTES	GEBCO 2013	Venice, ITA
18 - 21	IPTES	UKHO Japan Nippon Foundation CB Cat B Course Liaison visit	Taunton, United Kingdom
22	BESSERO	ERASMUS Conference	Lac Vassivière, France
23 - 24	BESSERO	4 <sup>th</sup> EC- IHO Meeting	Brussels, Belgium
23 - 01	WYATT	ABLOS Business Meeting	Muscat, Oman
26 - 04	IPTES	High Level Visit	Abu Dhabi, UAE and Male, Maldives
28 - 30	BESSERO	IFHS IHO Stakeholders Meeting	Southampton, United Kingdom
28 - 30	COSTA NEVES	IFHS IHO Stakeholders Meeting	Southampton, United Kingdom
<b>NOVEMBER</b>			
02 - 08	PHARAOH	HSSC 5	Shanghai, China
02 - 09	BESSERO	HSSC 5	Shanghai, China
02 - 10	HUET	HSSC 5	Shanghai, China
05 - 08	WARD	HSSC 5	Shanghai, China
11 - 16	PHARAOH	ISO TC/211	Redlands, USA
12 - 14	WARD	SWPHC 12	Republic of Vanuatu
16 - 19	BESSERO	MOWCA Sub-Regional Workshop	Pointe Noire, Republic of the Congo
21 - 27	WYATT	IMO Assembly 28	London, United Kingdom
<b>DECEMBER</b>			
02 - 06	HUET	HCA 13	Cadiz, Spain
02 - 06	WARD	HCA 13	Cadiz, Spain
06 - 13	WYATT	Capacity Building Technical Visit	Abu Dhabi, United Arab Emirates
07 - 14	COSTA NEVES	MACHC 14	St Maarten, Nederland
09 - 14	WARD	MACHC 14	St Maarten, Nederland
10 - 11	IPTES	High Level Visit	Valetta, Malta
19	BESSERO	OGC Stakeholder Workshop for Oil Spill Response Common Operating Picture	Leatherhead, United Kingdom

## Status Report on Performance Monitoring

### Background

The introduction of IHO performance indicators was decided in 2009 by the 4<sup>th</sup> EIHC, together with the adoption of the IHO Strategic Plan.

The implementation of performance indicators is described in the IHO Strategic Plan as follows:

*The implementation of performance indicators is based on a two level approach:*

*- strategic level: a small number of PIs associated with the objectives of the IHO (1 or 2 PIs per objective), to be agreed by the Conference (the Conference to be replaced by the Assembly when the revised IHO Convention enters into force) and managed by the IHB (the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force);*

*- working level: PIs associated with the strategic directions and managed by the appropriate subsidiary organs;*

*In this perspective cross-references between the objectives, the strategic directions and the PIs are arranged in the following way:*

*Objectives => strategic PIs => strategic directions => responsible organs => working level PIs*

*Accordingly, the assessment of the working level PIs and the review of progress with the strategic directions are considered in two phases: an initial review by the leading organ and an overall review by the IHB (the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force). Together with the assessment of the strategic PIs, these results are then submitted for consideration by the Conference (the Conference to be replaced by the Assembly when the revised IHO Convention enters into force). The submission should include a qualitative and, where practicable, a quantitative assessment of progress based on the value of the PIs. It should also include recommendations on management actions to be considered where trends indicate either a lack of progress or a change to an underlying assumption/direction is required. In this way the aim can be maintained and evidence of progress monitored/presented.*

The 4<sup>th</sup> EIHC adopted nine strategic performance indicators (SPIs) associated to the seven objectives of the IHO and invited the IHB Directing Committee to consider, in liaison with the HSSC and the IRCC, the implementation of working level performance indicators based on list of potential indicators associated with the strategic directions.

In 2012, the XVIII<sup>th</sup> IHC welcomed the monitoring system to be put in place by the IHB Directing Committee based on the Strategic Performance Indicators (SPI) of the Strategic Plan (see CONF.18/WP.1/Add.2) and invited them to take action. Moreover, the HSSC and the IRCC were invited to review the working level performance indicators relevant to them.

The Annual Report of the IHO for 2012 included Performance Indicators for the first time.

### Strategic Performance Indicators

Table 1 provides values for the Strategic Performance Indicators for 2013. The values for 2012 are included to enable trends and comparisons to be made.

**Table 1**  
*Strategic Performance Indicators (SPI)*

No PI	Designation	Source	Status 31 Dec 2012	Status 31 Dec 2013	General Trend
SPI 1	Number and percentage of Coastal States providing ENC coverage directly or through an agreement with a third party.	WEND WG through RHCs	No suitable information was available at IHB	No suitable information provided by RHCs IHB estimate: ~60%	
SPI 2	Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.	WEND WG and IHO on-line catalogue of coverage	Small scale: ~ 100% Medium scale: 88% Large scale: 95%	Small scale: ~ 100% Medium scale: 90% Large scale: 96%	↔ ↑ ↑
SPI 3	Percentage of Coastal States which provide hydrographic services, directly or through an agreement with a third party, categorized by CB phases, as defined by the IHO Capacity Building Strategy.	CBSC through RHCs	No suitable information was available at IHB	No suitable information provided by RHCs	
SPI 4	Percentage of "acceptable" CB requests which are planned. (Percentage of submitted CB requests that were approved)	CBSC	97%	75% <sup>6</sup>	↓
SPI 4 bis	Percentage of planned CB requests which are subsequently delivered.	CBSC	73%	86%	↑

<sup>6</sup> Reduction due to reduction in CB funds available in 2013

SPI 5	Number of standards issued (including new editions), per category: - hydrographic standards to enhance safety of navigation at sea, - protection of the marine environment, - maritime security, - economic development.	<b>HSSC</b>	<b>9</b> (See Appendix I) <i>Safety of navigation: 8</i> <i>Protection of the marine environment: 1 (S-102)</i> <i>Maritime security: 0</i> <i>Economic development: 0</i>	<b>4</b> (See Appendix I) <i>Safety of navigation: 2</i> <i>Protection of the marine environment: 2</i> <i>Maritime security: 0</i> <i>Economic development: 0</i>	↓ ↓ ↑ ↔ ↔
SPI 6	Number of potential new IHO MS (indicated by the start of the application process) relative to the number of “non-IHO” IMO MS.	<b>IHB through the Government of Monaco</b>	<b>8 / 89</b> (2011: 7 / 90) <i>Number of IMO MS: 170</i> <i>Number of IHO MS: 81</i>	<b>7 / 88</b> (2011: 7 / 90) <i>Number of IMO MS: 170</i> <i>Number of IHO MS: 82</i>	↔ ↔ ↑
SPI 7	Increase in participation / membership in RHCs.	<b>IRCC through RHCs</b>	No suitable information was available at IHB IHB estimate <sup>7</sup> : MS participation: 91% (2011: 75%) Non MS participation: 47%	No suitable information provided by RHCs IHB estimate <sup>8</sup> : MS participation: 83% Non MS participation: 25%	↓ ↓

<sup>7</sup> 2012:

based on:

- Number of RHC meetings: 12
- Participation of IHO MS: MS represented 77 times out of 85 possible attendances
- Participation of non IHO MS: Non-MS represented 32 times out of 68 possible attendances

2011:

based on:

- Number of RHC meetings: 12
- Participation of IHO MS: MS represented 68 times out of 91 possible attendances
- Participation of Non IHO MS: Non-MS represented 18 times out of 50 possible attendances

<sup>8</sup> 2013:

based on:

- Number of RHC meetings: 10
- Participation of IHO MS: MS represented 67 times out of 81 possible attendances
- Participation of non IHO MS: Non-MS represented 16 times out of 63 possible attendances

SPI 8	Percentage of available / agreed ENC schemes.	<b>WEND WG through RHCs or International Charting Coordination Working Groups (ICCWG)</b>	No suitable information was available at IHB	No suitable information provided by most RHCs <sup>9</sup>	
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<sup>9</sup> The status of ENC Schemes was provided by 2 RHC: SEPRHC and SWAtHC.

### HSSC Working Level Performance Indicators

HSSC4 agreed to implement the WPIs listed in table 2.

Table 2 provides values for the Working Level Performance Indicators for 2013 associated with Work Programme 2. Values for 2012 are included to enable trends and comparisons to be made.

**Table 2**  
HSSC WPIs

Metric	Source	Rationale	Status 31 Dec 2012	Status 31 Dec. 2013	General Trend
Number of S-100 based product specifications approved	IHB	Relative indicator of uptake of IHO standards including for purposes other than SOLAS navigation	1	0	↓
Percentage of annual work programme achieved	HSSC WGs (all)	Progress against objectives in the strategic plan	17%	19%	↑
Total number of participants at meetings (MS and Expert Contributors)	HSSC WGs (all)	Indicates participation of MS and wider community in execution of the plan	168 MS: 131 Expert Contributors.: 37	258 <sup>10</sup> MS: 172 Expert Contributors: 86	↑ ↑ ↑
Number of technical revisions and clarifications approved	IHB	Indicative of ability to provide comprehensive, safe and effective standards	5	3	↑
Number of ENCs distributed annually under license (equivalent annual licences)	WEND WG	Relative indicator of ENC usage throughout SOLAS market	2,052,269	2,202,487 <sup>11</sup>	↑

<sup>10</sup> The higher participation results from the increase in the number of meetings (10 in 2013 instead of 8 in 2012).

<sup>11</sup> Primar: 1,272,487; IC-ENC: 930,000

### IRCC Working Level Performance Indicators

Table 3 provides values for the Working Performance Indicators for 2013 associated with Work Programme 3. Values for 2012 are included to enable trends and comparisons to be made.

The information is incomplete. IRCC-5 invited RHCs to provide their estimated values of WPIs for 2013. According to the reports presented to IRCC6 in May 2014, only seven RHCs (BSHC, EAHC, MBSHC, NSHC, SEPRHC, SWPHC, USCHC) had completed this action.

**Table 3**  
*IRCC WPIs*

No PI	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	General Trend
WPI 15	Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.	WEND WG through RHCs	No suitable information was available at IHB	No suitable information available at IHB	
WPI 16	Number of additional IHO MS starting to produce & maintain (with/without support) relevant ENCs (contributing to 'adequate coverage') in the reporting period relative to those already producing at 01 Aug. 2008.	WEND WG through RHCs	No suitable information was available at IHB	2 (no suitable information provided by 8 out of 15 RHCs)	
WPI 17	Percentage of Coastal States delivering hydrographic services - categorized by CB phases (MSI services, surveying capabilities, charting capabilities), directly or through an agreement with a third party, at the end of the reporting period.	CBSC through RHCs	No suitable information was available at IHB	No suitable information provided by most RHCs	
WPI 18	Percentage of IHO MS updating their C-55 entry data regarding hydrography survey, INT charts, ENC, and MSI in the reporting period.	IRCC through RHCs	17% (14/81)	21% (17/82)	↑

<i>WPI 19</i>	<i>Status of hydrographic surveys in each region.</i>	<b>IRCC through RHCs</b>	<b>Metrics yet to be defined by IRCC</b>	<b>Metrics yet to be defined by IRCC</b>	
WPI 20	Percentage of agreed INT chart schemes, percentage of INT charts available.	<b>RCC through RHCs or ICCWGs</b>	88% (14 schemes out of 16) 72% (1,429 charts published out of 1,988 planned <sup>12</sup> )	88% (14 schemes out of 16 <sup>13</sup> ) 75% (1,491 charts published out of 1,980 planned <sup>14</sup> )	↔ ↑
WPI 21	Percentage of agreed ENC schemes, percentage of ENC available.	<b>WEND WG through RHCs or ICCWGs</b>	No suitable information was available at IHB	No suitable information provided by RHCs	
WPI 22	Increase in effective MS participation in RHC activities.	<b>IRCC through RHCs.</b>	No suitable information was available at IHB	No suitable information provided by RHCs	
WPI 23	Percentage of Coastal States which are IHO Member States.	<b>IHB</b>	54% (80/151)	54% (81 <sup>15</sup> /151)	↔
WPI 24	Number of new Coastal States joining the IHO during the reporting period.	<b>IHB</b>	1 <sup>16</sup>	1 <sup>17</sup>	↔
WPI 25	Number of potential new IHO MS (indicated by the start of the application process) relative to the number of "non-IHO" IMO MS.	<b>IHB</b>	<b>WPI 26 is the same as SPI 6</b>		
WPI 26	Percentage of Coastal States which have achieved CB phase 1, 2 or 3 and established a National Hydrographic Office.	<b>CBSC through RHCs</b>	No suitable information was available at IHB	No suitable information was available at IHB	
WPI 27	Number of States which have achieved CB phase 1, 2 or 3 and established a National Hydrographic Office in the reporting period.	<b>CBSC through RHCs</b>	No suitable information was available at IHB	No suitable information was available at IHB	

<sup>12</sup> Regions A and N, for which no scheme is available yet, are excluded.

<sup>13</sup> Each existing INT scheme counts for one, whether or not medium and large scale charts are included in the scheme.

<sup>14</sup> Regions A and N, for which no scheme is available yet, are excluded, although 15 INT charts (for Region A) and 8 INT charts (for Region N) are already published

<sup>15</sup> Serbia is not considered as a Coastal State.

<sup>16</sup> Cameroon

<sup>17</sup> Montenegro



WPI 28	Percentage of Coastal States which provide ENC coverage directly or through an agreement with a third party.	<b>WEND WG through RHCs</b>	<b>WPI 28 is same as SPI 1</b>		
WPI 29	Percentage of Coastal States which have set up a national geospatial infrastructure.	<b>IRCC through RHCs</b>	No suitable information was available at IHB	Limited information available at IHB <b>IHB estimate: 18% (28/151)</b> <i>(based on limited information provided by some RHCs and MSDIWG)</i>	
WPI 40	Number of agreements signed in the reporting period, including bilaterals and RENC membership, etc.	<b>IRCC through RHCs</b>	Limited information available at IHB. <b>IHB estimate: 2</b>	No suitable information available at IHB	
WPI 41	Percentage of planned CB events that are achieved.	<b>CBSC</b>	<b>WPI 41 is the same as SPI 4bis</b>		
WPI 42	Number of acceptable CB requests received.	<b>CBSC</b>	<b>31</b>	<b>28</b>	↓
WPI 43	Percentage of "acceptable" CB requests which are planned.	<b>CBSC</b>	<b>WPI 43 is the same as SPI 4</b>		

## **IHB Directing Committee Responsibilities**

### **Robert WARD – President**

- Relations with EU, the United Nations including IMO and WMO, international bodies concerned with hydrographic matters in polar regions, Non-Member States of the IHO, and other relevant organizations and bodies as appropriate;
- Matters concerning IHO Membership, Host Government Affairs;
- Public Relations;
- Finance and Budget;
- Strategic Plan, Work Plan;
- Programme Performance Reporting;
- Translation services;
- IHO Publications;
- IHB Administration, Information Technology;
- IHB Personnel Administration, Staff Regulations;

and the following Regional Hydrographic Commissions:

- Arctic Regional Hydrographic Commission;
- East Asia Hydrographic Commission;
- Meso American - Caribbean Sea Hydrographic Commission;
- South Africa and Islands Hydrographic Commission;
- South West Pacific Hydrographic Commission;

and the following Commission:

- Hydrographic Commission on Antarctica.

### **Mustafa IPTES - Director (Regional Coordination Programme)**

- IRCC, and subordinate bodies, including IBSC and GEBCO;
- Relations with FIG, IOC, the academic sector (education and training), and other relevant organizations, concerning the IRCC programme;
- Capacity Building, Training, Education and Technical Co-operation, including CB Work Programme, CB Fund and budget;
- International Hydrographic Review;
- IHO Conference;
- Annual Report;

and the following Regional Hydrographic Commissions:

- Baltic Sea Hydrographic Commission;
- Mediterranean and Black Seas Hydrographic Commission;
- North Indian Ocean Hydrographic Commission;
- ROPME Sea Area Hydrographic Commission;
- USA and Canada Hydrographic Commission.

**Gilles BESSERO - Director (Technical Programme)**

- HSSC and subordinate bodies;
- Relations with ABLOS, IALA, ICA, IEC, ISO, and other relevant organizations, concerning the HSCC programme;
- Technical Support services;
- Stakeholder Liaison;

and the following Regional Hydrographic Commissions:

- Eastern Atlantic Hydrographic Commission;
- Nordic Hydrographic Commission;
- North Sea Hydrographic Commission;
- South East Pacific Regional Hydrographic Commission;
- South West Atlantic Hydrographic Commission.

## IHB Staff Responsibilities

### Professional Staff

Mr. A. COSTA NEVES (Brazil)	ADCC	Cooperation and Capacity Building
Ms. G. FAUCHOIS (France)	MFA	Manager, Finance and Administration
Ing. en chef M. HUET (France)	ADCS	Charting and Services
Mr. A. PHARAOH (South Africa)	ADDT	Digital Technology
Mr. D. WYATT (UK)	ADSO	Surveying and Operations

### Translators

Ms. M.P. MURO	SpTr	Spanish Translator
Ms. I. ROSSI	HFrTr	Head French Translator
Ms. P. BOUZANQUET	FrTr	French Translator

### Technical, Administrative and Service Staff

Ms. I. BELMONTE	WPE	Website and Publications Editor
Ms. S. BRUNEL	AAA	Administrative and Accounting Assistant
Ms. D. COSTIN	ITO	Information Technology Officer
Ms. C. FONTANILI	PA	Personal Assistant to the Directing Committee
Mr. A. MAACHE	BSA	Bureau Support Assistant
Mr. D. MENINI	CGA	Cartography and Graphics Assistant
Ms. M. MOLLET	REG	Registrar, Librarian
Ms. B. WILLIAMS	HREG	Head of Registry

### Seconded Officers

Mr. Myung-Won PARK (Republic of Korea)		Website Development Projects
Mr. S. YAMAO (Japan)		GIS and IT Projects

### Short-term support (under contract)

Ms. B. COSTIN (from July 2013)	CBA	Capacity Building Assistant
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